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The Beattie-Smith Lectures.[1]

(UNIVERSITY OF MELBOURNE.)

ARCHIVES OF VICTORIAN PSYCHIATRY.

By C. R. D. BROTHERS,

Melbourne.

LECTURE I: INSTITUTIONS AND ADMINISTRATION.

I SHOULD very much like to express my appreciation to the Council of the University of Melbourne for the honour of having been invited to present the Beattie-Smith lectures for 1956. Beattie-Smith, a leading Victorian specialist in mental diseases at the turn of the twentieth century, as we all know, did much for the early advancement of psychiatry in this State. Prior to entering into practice as the first private consultant in Melbourne, he gave many years' valuable service to the Victorian Government, especially by his pioneering efforts in the teaching field. Since his time, psychiatry, like all other fields of medicine, has made tremendous progress. However, in order to appreciate the significance in any advancement, it is essential to make oneself familiar not only with events of more recent times, but also with those of earlier years. Consequently, in taking the history of Victorian psychiatry as my subject, I have chosen this very early period from 1835 to 1905 as the theme for these lectures. In this first lecture I propose to present a summarized account of the origin and growth of the Mental Hygiene Department, telling of the administration of the day and the care and provision afforded to the mentally ill.

At the time of the first settlement of Victoria, then known as the Port Phillip District, the incidence of mental disease within the Colony was comparatively low. As a result there was no accommodation for the mentally ill other than that provided at the gaol in Melbourne. This was a primitive building in the vicinity of King and Collins Streets, which served as a temporary hospital as well as the local "lock-up". On completion of the new Metropolitan Gaol, patients were immediately transferred there, where they came under the surveillance of the Assistant Colonial Surgeon, Dr. Patrick Cussen. Dr. Cussen, the first Colonial Surgeon in the Colony, was appointed by Governor Burke of New South Wales in 1837, two years after settlement. In the course of his many duties in this capacity he had to visit the gaol regularly, and thus he became the first person in Victoria ever to attend the mentally ill professionally.

In those early days the nearest lunatic asylum to Melbourne was at Tarban Creek in Sydney, where some patients (no doubt the more troublesome ones) were transported by ship. However, with the rapid growth of the

[1] Delivered at Melbourne on September 5 and 12, 1956.

Colony and the increasing number of patients it soon became apparent that this practice should cease and that a separate institution should be provided within the Port Phillip District. As time went by and the Government took no action, the urgency of the situation was taken up by the Press. In 1841 the *Port Phillip Gazette* stated:

> It has become highly necessary that a building be set apart entirely for the provision of lunatics, as the new watchhouse appropriated for this purpose is too noisy and people living nearby are disturbed by maniacal yells and laughter.

Eventually, in 1845, the New South Wales Council appropriated £1000 toward the erection of a new asylum, on the understanding that the cost of the construction would not exceed £3000. Subsequently an account appeared in *The Argus* on August 11, 1846, which read as follows:

> A site of 620 acres has been selected for the establishment of the new Lunatic Asylum at the junction of the Merri Creek and Yarra River adjoining the aboriginal ground reserve at Dight's Mills.

Two years later, in reporting that the building was nearing completion, *The Argus* expressed the fear that, with Latrobe as head of affairs, the institution might be allowed to become merely another gaol instead of an asylum for the insane, especially in view of the handling of Tarban Creek, which had recently led to an inquiry.

In September, 1848, the new asylum, when partially completed, was announced as being in readiness for the reception of some patients. This original construction was a single-story bluestone building, calculated when finally completed to accommodate 33 male and 30 female patients. Mr. George Watson, of Sydney, was appointed as superintendent; Dr. Cussen, in his capacity as Colonial Surgeon, was to act as visiting medical officer, and the staff appointed were two male and two female attendants, one cook and one laundress.

1848 to 1853: Watson and Sullivan.

On October 5, 1848, the new asylum was proclaimed a ward of the Gladesville Lunatic Asylum of Sydney. Although it was locally known as the Lunatic Asylum Merri Creek, official documents invariably referred to it as the Melbourne Lunatic Asylum, and it did not become known as "Yarra Bend" until after the separation of Victoria and New South Wales in July, 1851. On the date of Proclamation, on the order of Governor FitzRoy of New South Wales, the first 10 patients were admitted to the asylum. These were transferred from the Melbourne Gaol. By the end of the year the asylum contained 21 inmates, most of whom had been similarly transferred. Incidentally, in the transfer of these patients it is interesting to note that the Colonial Surgeon in his dual capacity of medical officer to both the gaol and the asylum, frequently undertook himself to escort many of the early patients admitted from the gaol, transporting them in his own vehicle.

In the following year, 1849, various events of note took place. In May, Dr. Cussen died and was succeeded by Dr. O'Mullane, who acted temporarily until the appointment of the new Colonial Surgeon, Dr. John Sullivan. In July, an Act was passed by the New South Wales Parliament, vesting in Latrobe the same powers in respect to the mentally ill in his district as were possessed by the Governor of New South Wales. However, early warrants of admission in our possession clearly indicate that Latrobe had been exercising these powers months before he was entitled to do so. Later, a Board of Management consisting of the Colonial Surgeon, the Superintendent and a Visiting Magistrate was created, and regulations were gazetted setting forth the duties of all employees of the asylum. The final point of interest for that year was an entry in the Admission Register of December 6, which stated that 14 patients had been brought down from Tarban Creek by ship; nine of these had previously been transferred there from Melbourne prior to the erection of the asylum.

In 1851, Dr. Thomas Embling, the first resident medical officer, was appointed. At this stage, although two new wings had been added, the number of patients had so increased that the institution had soon become overcrowded. Unfortunately there was no improvement in conditions on Dr. Embling's arrival. He was keenly resented by both the Superintendent and the Colonial Surgeon, and from all accounts had a most difficult time. This lack of harmony and cooperation eventually led to such a deplorable state that in the following year the public demanded an investigation. For this purpose a Select Committee of Inquiry was set up, and so began the first of a series of many minor and major inquiries and commissions into the Lunacy Department that were repeatedly held throughout the remainder of the nineteenth century.

As a result of this inquiry of 1852 the entire staff of the asylum was dismissed. The investigating committee found the Superintendent, the Colonial Surgeon and the Visiting Magistrate all guilty of having been extremely neglectful in their duties, and completely heedless of the patients' welfare in having permitted the grossest immorality to take place. Against Embling the committee found no evidence whatsoever, stating that his only fault had been the possession of too much conscientiousness and a desire to make himself too useful to the public. However, on February 12, 1853, *The Argus* amazed the public by stating that "in the face of evidence of atrocities the Governor pronounced Yarra Bend one of the best managed establishments in the Colony", and continued: "Mr. Watson was given another appointment but Dr. Embling was merely turned adrift." Later it reported that both the Colonial Surgeon and the Visiting Magistrate had been reappointed as Official Visitors. But it did not allow the matter to rest there. In its editorials of February 21 and 22 this newspaper bitterly attacked Latrobe, stating that "the influence of a weak, partial frivolous head is felt in every ramification of the Government and before the public service can be properly organized we must have a competent Governor".

Thus came to an end the only period in the history of the Victoria Mental Hygiene Department when there was ever lay control of an asylum, the failure of which control was all too clearly demonstrated.

1853 to 1863: Bowie and McCrea.

After Mr. Watson's removal from office, on October 13, 1852, Dr. Robert Bowie, the first "Surgeon" Superintendent, was appointed. Dr. Bowie was reputed to have had considerable experience in the treatment of lunatics in various asylums in England. Although at the time of his appointment Bowie was personally assured by Latrobe that he was to be head of that department, he was later made directly responsible to the new Colonial Surgeon, or as his title became, Chief Medical Officer, Dr. William McCrea.

In spite of the fact that at the beginning of his appointment Bowie made several disparaging references to the asylum, he nevertheless began his term well, immediately setting about instituting many forms of improvement. This was evident in a description of Yarra Bend given by a Mr. Horne, a visitor to the Asylum. (Figure I.) From this account on March 14, 1853, *The Argus* published the following quotation:

> The situation is the perfection of selection and is comparable to the Botanical Gardens . . . airy, sheltered, picturesque, commodious, well wooded, and removed from the turmoil and distractions of every-day life. Of the interior . . . perfect cleanliness, quietude and order. Under the present management at Yarra Bend, the kindest feelings and the best systems are in operation . . . a very important institution under the right man.

No doubt largely as a result of this favourable publicity, there then followed the first ever recorded instance of an outside contribution to assist the mentally ill, when a donation of £12 was made by a Flinders Lane merchant "to be spent judiciously on extra comforts for the insane".

Shortly after Bowie took up office, the Government decided to create a Board of Official Visitors. These Visitors consisted of some of the leading Victorian surgeons, and their chairman for many years was the then Lord Mayor of Melbourne. Their duties were to make regular visits to the asylum, inspecting the management

and conditions, a comprehensive report on which they then forwarded to the proper authority.

Although in the early stages Bowie was able to make such an improvement, later, when he encountered difficulties, his enthusiasm would appear to have waned. His biggest problem, as all those who came after him were to find, was that of accommodation. When he first took over, the existing 74 patients were all housed in the original stone building; but with the discovery of gold in Victoria and the sudden influx in the population, a much larger number of patients began to require accommodation, and for these numbers this single building soon proved totally inadequate. At first temporary timber buildings and tents were put up, but by 1856, when permanent wards in bluestone were erected, accommodation was made available for at least 300 patients.

An additional bone of contention to Bowie was the Chief Medical Officer. Throughout the length of their term together there was considerable animosity between them. This may have begun over the circumstances surrounding the discharge of a patient who later was awarded a large sum of money by the Government in a case he brought against them for "wrongful detention". On the other hand, it may well have been due to antagonism displayed by Bowie, in resentment at having been made responsible to McCrea. In retaliation, on his rounds of inspection McCrea frequently found fault with the institution, he attacked Bowie in his annual reports, and he continually interfered with the administration of the asylum, especially in regard to the patients' dietary scale; this interference eventually led to an inquiry.

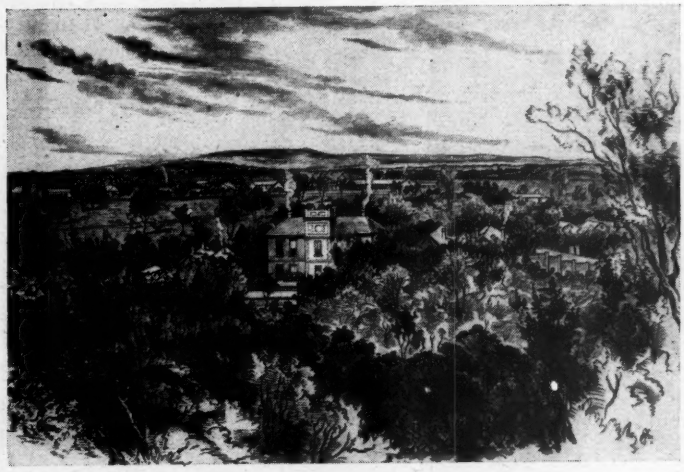

FIGURE I.

The Yarra Bend Lunatic Asylum, Studley Park. (From *Illustrated Melbourne Post*, June 25, 1862.)

From the beginning, McCrea had been most critical of the site of Yarra Bend. He said that his objection was on the grounds that it had no prospect and was too secluded. In a report he made the following statement:

> The high land in Studley Park shuts the Asylum out from the prevailing cool wind in summer and thus takes away materially from the comfort of the inmates; at the same time the distance is so small that any person on Studley Hills can readily communicate with lunatics working or walking in the grounds of the Asylum.

As a result of this description, in 1854 a board appointed to inquire into the asylum, consisting of the Speaker, Judge Barry and McCrea, reported that the site and buildings were altogether unsuitable, and recommended the erection of a new institution on a more appropriate site. In accordance with this suggestion, it was decided to erect a new institution on a site of 640 acres, selected at Kew. This was planned as a fire-proof building to accommodate 300 patients, constructed along similar lines to Colney Hatch in England. However, McCrea, it would seem, was not so concerned about the erection of an additional asylum for the purpose of accommodation, as in dispensing with the existing one entirely and starting anew with a more modern institution on a more favourable site. But little did he realize the setbacks he would have to endure before this grand edifice he had envisaged would finally be completed.

Construction at Kew was first reported to have begun in 1856. The following year, however, the Legislative Assembly refused to grant additional funds, owing to the already high cost of the construction, and instead voted £10,000 for the retention of Yarra Bend. In 1858, in an attempt to induce Parliament to proceed with the new institution, a select committee made a further investigation of Yarra Bend. They reported as follows:

> The present site is low, close, and gloomy. The prison-like buildings and gloomy atmosphere of the exterior is sufficient to produce depressing effects on the healthy; but a survey of the interior exhibits a series of wretched placements utterly unsuited for the purposes of such an establishment. The buildings are disgustingly fœtid and excessively dangerous for the reason that many were constructed of wood, while the partitions in the stone building also being of wood made the place very liable to destruction by fire. There is indeed a growing feeling that small buildings, detached from each other, afford the best means of curative treatment in a large number of cases, and were it not for the question of expense nearly all witnesses would agree in recommending that which has been named the "cottage" system.

But in spite of this unfavourable report Parliament remained adamant. In his report of 1857 McCrea blamed Bowie for this, stating that it was his objection to removal from the Yarra Bend site that had been one of the chief factors influencing the Government. However, the following year the Council, landowners, and householders of Kew sent in a petition strongly objecting to the erection of an asylum in their district, and operations came to a standstill.

McCrea, a little man, was an aggressive bureaucrat, full of drive, but rigid and intolerant. Although he was relieved of his position some ten years prior to the actual occupation of Kew, nevertheless that institution remains as a monument to him for years to come, and he will best be remembered as having had the foresight to have selected so eminently suitable an elevated site for a mental hospital.

During the years 1858 and 1859, as a result of the conflict that took place between Bowie and McCrea, certain newspaper paragraphs began to appear concerning Yarra Bend and relating to an alleged "anomalous state of affairs existing in the Institution". Finally, in 1862, matters reached such a stage that a Committee of the Legislative Assembly was appointed to inquire into the affairs of the asylum. However, before this inquiry could be concluded, *The Argus* brought forth a series of articles condemning Bowie. Their main accusations were allegations of cruelty and inhuman methods of restraint. The investigating committee, on the other hand, not only cleared Bowie of all charges, but drew attention to the fact that McCrea had interfered with the management of the institution considerably to its detriment. They concluded with a glowing account of Bowie's superintendency. Immediately after publication of this, Bowie sued *The Argus* for £3000 in an action for libel. This case, known as "Bowie versus Wilson", was described as a "nine days' wonder", and although Bowie won, he was awarded only £100. *The Illustrated Melbourne Post* then sprang into action in

defence of Bowie, as they believed, he had not received justice. They stated that no consideration had been given to the violent character of many of the patients, and to the fact that it had been impossible to obtain high-class attendants. They also went to great lengths to defend Bowie's method of restraint, which I have described in detail in my second lecture.

During this period Yarra Bend certainly had its full share of publicity. In fact, publicity nowadays appears almost dwarfed in comparison (Figure II). Some wrote of the institution in the most glowing terms, others referred to it as a "veritable snakepit", and these varied accounts were most confusing.

At the conclusion of the inquiry McCrea was dismissed, and Bowie, in spite of having been exonerated of all charges, was relieved of his position and superannuated on half pay. The administration of the asylum was then placed in the hands of a Board of Commissioners. One of this Board, a Mr. Harcourt, a layman with considerable experience of private asylums in England, offered his services gratuitously until such time as another medical man could be appointed to take over control of the institution. This offer was accepted, and he acted in this temporary capacity until the arrival of the new superintendent on February 18, 1863.

FIGURA II.

Scene on the upper Yarra. The Lunatic Asylum, Yarra Bend. (From *Illustrated Melbourne Post*, March 24, 1864.)

1863 to 1882: Paley.

Dr. Edward Paley, the man finally chosen for Yarra Bend, was a surgeon of considerable experience and ability, having assisted at many of the hospitals and asylums throughout England. Shortly after Paley's arrival, changes were made in the constitution of the department. The title of Superintendent was altered to that of "Inspector", and control of the department was no longer placed under the Medical Department, the Inspector being made directly responsible to the Chief Secretary.

At this stage Yarra Bend was still the only lunatic asylum in Victoria. The number of inmates having risen to 850, the institution had become acutely overcrowded. This position had been foreseen by both Bowie and McCrea, who had in vain made repeated requests to the Government for the establishment of additional asylums. Such country centres had been suggested as Ararat, Beechworth, Sandhurst (Bendigo), Ballarat and Sunbury. But it was not until the inquiry of 1862, when the continuation of Kew and the immediate erection of institutions at Ararat and Beechworth were recommended, that anything was done to relieve the situation. By this time the position had become such that temporary accommodation had immediately to be sought elsewhere. As a result, from this time onwards until the completion of the asylums at Ararat, Beechworth and Kew, the department was forced to take over and later abandon a series of temporary buildings which acted as receiving houses and asylums.

The first of these temporary establishments was the Western Gaol in Collins Street. This was altered and converted for the reception of patients, and with Dr. Thomas Dick as Resident Surgeon, it was opened in November, 1863. It was next decided to take over a building in the Royal Park known as the Powder Magazine. This was also converted, and with Dr. Allan, the Resident Surgeon of Yarra Bend, in charge, duly opened some time towards the close of the year 1864. Shortly after this building was taken over it was decided to dispense with the gaol at Collins Street, and in its stead take over the Collingwood Stockade. This building was situated on that area just east of the Melbourne Cemetery, which later came to be occupied by the Lee Street State School, and which, although originally known as the Collingwood Stockade, at this stage came to be included in the Carlton district. These two acquisitions, Royal Park and Carlton, being within reasonable distance, were then placed under the control of Dr. Gordon, the successor to Dr. Allan.

Eventually Royal Park was dispensed with, and the Receiving House at Carlton was gazetted as an asylum. Carlton had accommodation available for nearly 200 patients, and in the nine years it was in operation a total of more than 1100 patients were admitted. From 1869 until 1872 it was specially designated for the care of harmless imbeciles. On the opening of Kew in 1872, it functioned as a ward of that asylum, but closed the following year on being handed over to the Schools Department.

In 1865, Government patients were also sent to "Cremorne". This was a private asylum Mr. Harcourt had opened in the vicinity of Richmond, and although it was not officially opened until 1867 as a licensed house, nevertheless it functioned for three or four years before actually being permitted to operate legally. From all accounts this appears to have been an exceptionally well-run institution where the patients were happy and contented, and it later proved of much value to the community in relieving the pressing need of providing special care for those of a more refined background who could afford to pay for the extra care and comfort that such an asylum made available.

By the following year, 1867, the two country asylums, Ararat and Beechworth, were completed and ready for occupation. Ararat, under the superintendency of Dr. Alexander Robertson, was opened on October 19, and Beechworth, under Dr. Dick, was opened five days later (Figure III).

Patients were immediately transferred to these two asylums, and for the time being they considerably eased accommodation. However, within a very short time the situation was to become much worse. This was largely on account of the new Lunacy Statute of 1867, under which provision was made for the transfer of all imbeciles, idiots, feeble-minded persons and harmless seniles from their previous places of abode, such as the benevolent asylums and general hospitals, into the asylums for the insane. By this means the number of admissions increased in one year alone by 276. Later criminal lunatics and alcoholics were also admitted into these asylums. Paley protested vehemently about the admission of such patients, stating that they had a most damaging effect on the prospects of cure of the mentally deranged. But it was not until several years later that they were eventually removed and provided with separate accommodation. One compensating factor in this Statute had been the slight easing of accommodation, with the introduction of trial leave for improved patients. To ease the situation further, Paley also suggested the boarding-out of harmless "chronics" to responsible persons, as had been most successfully attempted in England.

In his annual report of 1870, Paley stated that Yarra Bend was one of the largest asylums in the world, there being only seven others—Hanwell, Colney Hatch and Wakefield in England, Bicêtre, the Salpétrière and Clermont in France, and the New York City Asylum—that possibly were larger. At this stage the total number of patients listed at Yarra Bend was given as 1043.

At long last, on December 18, 1871, a section of Kew was finally opened. This completed section first acted as a ward of Yarra Bend, but in the following year, although it was still not completed, the institution became gazetted as the Kew Lunatic Asylum. With the transfer of patients from the old asylum to the new, it was possible to demolish several wards at Yarra Bend, and to close down others. Thus, with the accommodation afforded at Kew and the erection of additional wards at Beechworth, the position so eased that in 1873 the unprecedented event occurred of accommodation available actually exceeding that of demand.

In 1877 the Industrial School at Ballarat was taken over; this was for the separate acommodation of some 200 imbeciles and idiots. In 1879 arrangements were also in hand to take over the Industrial School at Royal Park (today known as the Children's Welfare Depot); but at the last moment the Government changed its mind, and not only did they retain the establishment at Royal Park, but in addition reclaimed the school at Ballarat. In exchange, the department was offered the Industrial School at Sunbury, and so with the transfer of patients from Ballarat, Sunbury became the new institution for the care of imbeciles. However, as shortage of accommodation later became acute, Sunbury gradually changed its character until it functioned as merely another asylum.

During the first fifteen years of Paley's administration, the expansion of the department judged on present-day achievements was truly remarkable. In this period five new asylums were opened—Carlton, Kew, Ararat, Beechworth and Sunbury; five new lunacy wards at public

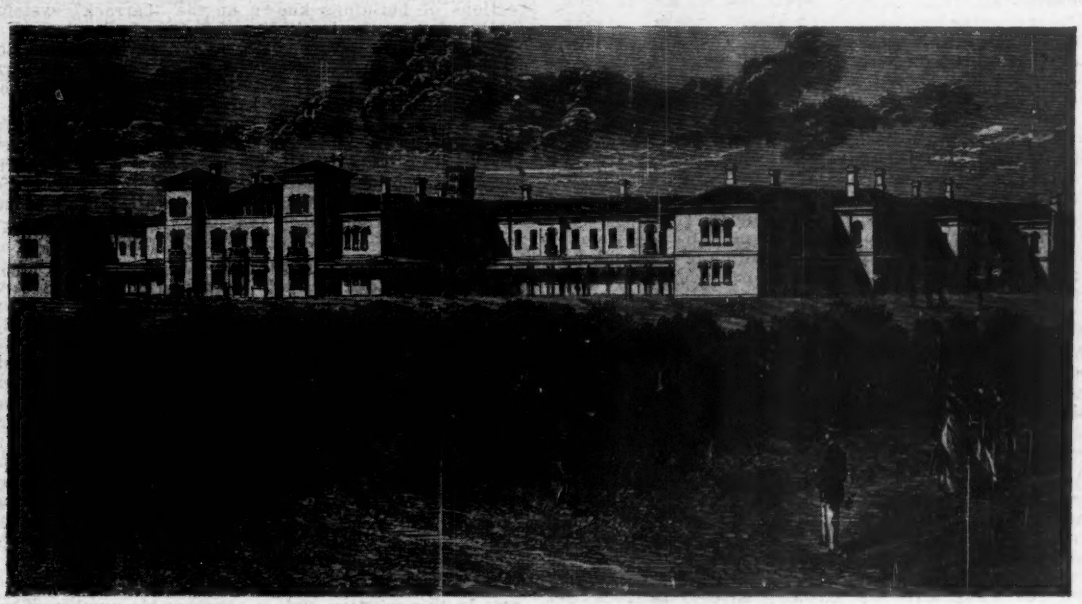

FIGURE III.
Beechworth Mental Hospital, May, 1867.

About this stage the country general hospitals also began to provide for the mentally ill. On July 1, 1871, a special lunacy ward attached to the Castlemaine Hospital was opened. In 1873 similar wards were gazetted at the general hospitals of Bendigo, Geelong, Woods Point and Sale. Paley regarded these wards as of considerable value, and trusted that it would be possible to extend them in the future. But as time went on this service gradually discontinued. Woods Point operated for no more than two years, and by 1884 the only remaining lunacy wards were those at the hospitals of Bendigo, Castlemaine and Geelong.

In the year 1872, an Act was passed to provide for the care and treatment of inebriates. This was brought about when Section 17 of the Lunacy Statute, under which the Master-in-Lunacy was empowered to order the detention of habitual inebriates in a lunatic asylum for one year, was repealed. As a result a private retreat for inebriates under the superintendency of a Dr. McCarthy was opened in Northcote. This was the first institution of its kind in the world, owing to the fact that power had been granted by Act of Parliament to compel inebriates to enter for treatment. However, today Victoria must surely be in the unique position of being the only place, at least in the British Commonwealth, where there is at present no separate accommodation provided for inebriates.

hospitals were opened; and in addition were established the first private asylum and separate institution for inebriates. That these institutions were urgently needed was all too evident by the increase in patients; from 850 in 1863 the number had increased more than threefold to 2,645 in 1878. However, that so much should have been accomplished during these years says much for Paley. He was a man of insight, with advanced ideas in lunacy reform, and some of his recommendations, although not accepted in his life-time, have since been adopted. The most important of these were the following: (i) establishment of a special idiot asylum at Kew with proper facilities for teaching and training; (ii) segregation of criminal lunatics, who were to be accommodated in a special criminal lunatic asylum, preferably at Pentridge; (iii) non-committal of inebriates to asylums, and non-committal of seniles or persons with nervous disorder associated with mental enfeeblement; (iv) establishment of the "boarding-out" system; (v) employment of resident chaplains; (vi) limitation of the size of asylums to contain not more than 600. In making this recommendation Paley kept in mind the futility of erecting large country institutions, as patients invariably preferred to come to the city.

During these years, although the Government had assisted Paley to bring about this expansion, they later

clamped down on all expenditure. Their attitude became symbolized by efficiency at the least amount of cost, and so long as they made a profit from the institutional farms and breweries, apparently they cared little for the actual welfare of the patients. This added considerably to the other difficulties Paley encountered. Earlier, Kew had proved unsuitable for the treatment of early patients, and Yarra Bend, in spite of its antiquity, was much better suited. In 1876 an important inquiry took place on the management at Kew. Political interference also became a source of much frustration. At various inquiries it was frequently pointed out that positions on the staff were all too often obtained by those with political influence. However, owing to the economies that Paley was forced to adopt (the extreme overcrowding of the institutions and the considerable reduction in staff), in these latter years the department was allowed to deteriorate considerably, and on the eve of his retirement Paley stated that all available accommodation had again become almost exhausted.

1882 to 1894: Dick.

In 1882 Paley was succeeded by Dr. Thomas Dick, the one-time medical officer of the Collins Street Gaol. Unfortunately for Dick, owing to the deterioration that had set in during Paley's last years, a grand inquiry was held shortly after his succession. This was the famous Zox Commission, which began in 1884 and lasted for two or three years. This commission made a very thorough investigation into the department and put forth many important recommendations. The chief of these were the following: (i) end of political control; (ii) abolition of Official Visitors' Boards; (iii) formulation of a commission to govern and control asylums, consisting of two laymen and a medical man, the commission to be directly responsible to Parliament; (iv) removal of the department from the control of the Public Service Board; (v) establishment of receiving houses—at Yarra Bend for the metropolis, and at Ararat and Beechworth for the country areas; (vi) establishment of a government asylum for inebriates, and another for paying patients; (vii) establishment of an asylum for criminal lunatics, and the erection of a separate institution for idiots.

As a result of these recommendations, licensed houses were declared illegal, and after operating for over twenty years as a private asylum under the guidance of Mr. Harcourt and Dr. Graham, "Cremorne" was forced to close. Another decision of the Government arrived at as a result of this Commission was the disposal of both Yarra Bend and Kew. This was strongly opposed by Dick, not only because of their convenience to visitors, but because of the necessity of having such institutions within a reasonable distance of the university for clinical teaching. But he need not have worried. Later the financial depression of the 1890's intervened and resulted in such curtailment of expenditure that it became impossible to erect any new institutions, and so both Yarra Bend and Kew were retained.

Two recommendations of this Commission that were put into early effect were the establishment of the idiot institution at Kew, and the separate accommodation of criminal lunatics at the gaol at Ararat. The first three cottages for the imbecile children were opened in 1887. These later formed the Idiot Asylum, now known as the Children's Cottages. When they were visited by a medical conference in 1889, this section was declared to be the most advanced of its kind in Australia, and was further said to be the only place in the world which provided such accommodation and training for mentally defective children.

Later, further legislation made provision for the establishment of receiving houses, for the boarding out of patients, and for the government control of inebriates. Dick also made the suggestion that provision be made for voluntary boarders, but this apparently was deferred. As a result of this legislation, although at first a temporary asylum was established for inebriates, by 1890 the Government had acquired both a permanent establishment at Beaconsfield and control of the private retreat at Northcote. However, so few were the numbers who requested admission that after two years it was decided that they both be closed down. The establishment of the "boarding-out" system met with little more success. This had been introduced for harmless chronic patients, and it had been hoped by this means to relieve the institutions of valuable accommodation for more acutely ill patients; but even though they were paid for this service, few people could be induced to take these patients into their homes.

Since the acquisition of the last institution by the department (Sunbury, in 1879), owing to the extreme lack of funds, as further accommodation was required additional buildings were merely added to all existing institutions. In this process Yarra Bend and Kew underwent considerable alterations. A section of the former was opened as a receiving house, and additional cottages were erected at Kew for the idiot institution.

At this period the trend in lunatic asylum construction, rather than inclining to the method of closely confined sections of buildings known as the "barrack" system as represented by the institutions of Ararat, Beechworth and Kew, tended to revert more to the early system Bowie had inaugurated—the establishment of numerous separated cottages. These cottages were found to be especially beneficial in the treatment of early patients, and as it had been decided to establish the receiving house at Yarra Bend, the accommodation for this centre was therefore provided on this "cottage" principle. However, it is interesting to note that with the erection of additional cottages at Ararat, Beattie-Smith, while Superintendent of that institution, made the following statement in his report of 1888:

> It is to be hoped that no further extension of buildings on the Cottage plan will be carried out, as they are not only costly to build, but costly and difficult to supervise, even if we did have suitable patients to put in them which we have not.

In 1892 the Government handed back the Industrial School at Ballarat. The return of this institution so eased accommodation that the department was again able to cope with the numbers requiring admission. However, unfortunately the financial depression that followed the Zox Commission put an end to any substantial improvement that might therefore have resulted. Consequently, on his retirement in 1894, Dick left the department in a state very little better than when he first took over.

1894 to 1905: McCreery.

Dr. James McCreery, the new Inspector, like Dick, also rose to this position after a considerable number of years' service in the department. It was during his term at Kew that the Idiot Asylum was first established. In these defective children McCreery took a special interest, and it was he who first inaugurated classes for their teaching and training.

As head of the department, McCreery, just as Dick and Paley had found earlier, soon realized that one of his biggest problems was the divided control of authority. Interference by both the Public Service Commissioner and the Under Secretary became such that it was virtually impossible to delegate authority or even to maintain adequate discipline. In an effort to relieve this situation, McCreery recommended that the powers vested in the Under Secretary, the Master-in-Lunacy, the Tender Board, the Public Service Commissioner and the Public Works Department, should all be placed under one controlling body. But no heed was taken of this suggestion until the advent of his successor in 1905.

However, to McCreery, an even more urgent problem than that of administration was the lack of funds. Owing to the extreme measures of economy that the Government was forced to adopt during the depression years, so depleted had these been that the department was allowed to fall into an even worse state of deterioration. This fact was borne out by Dr. W. E. Jones, who on his arrival here in 1905 was confronted by extremely neglected institutions sadly in need of repair with poorly trained and inadequate staff; there was no water-borne sewerage, no

telephone and no labour-saving device of any kind, and electricity was only just beginning to replace gas.

Apparently things had reached such a stage that the Government decided that their best policy was to bring out an expert from England and to make an extra allocation of funds in an attempt to put the department in order. Consequently, although still not receiving all the assistance necessary, Dr. Jones met with a great deal more cooperation than did either of his predecessors.

On his succession the difficulties of administration were considerably alleviated when by Act of Parliament the title of Inspector was altered to that of Inspector-General, and the head of the department was immediately vested with the powers of a public service commissioner. With the authority thus afforded him, Dr. Jones was able greatly to improve the efficiency and economy of the department. This arrangement continued satisfactorily until recently, when for political reasons in 1942 the Mental Hygiene Department was made a branch of the Department of Health. As a result, control of staff once more reverted to the Public Service Board, and thus today does the present Mental Hygiene Authority find itself back in the same administrative position with regard to staff as existed at the end of the last century.

In the year 1905 two other important steps were taken. The first was the reopening of licensed houses for private "paying patients", and the second was the making of provision once more for the separate accommodation of inebriates.

The subsequent history of the department, from this time onwards, was admirably covered by Dr. Jones in his Beattie-Smith lecture "Psychiatry: Past, Present and Future", presented in 1938, and so I shall go no further. However, before concluding this portion of my address I should like to refer to a most interesting recommendation made by McCreery in 1898. Anticipating that after Federation the care of the insane would remain under the State, he recommended the appointment by the Federal Government of Commissioners in Lunacy to visit, inspect and report on all asylums and hospitals in which mental patients were detained. These commissioners were to have no powers of interference, but acting as independent experts they would keep the authorities and public of each State informed of any shortcomings, thus developing a uniform system throughout the Commonwealth for the care and treatment of the insane. This recommendation, incidentally, although made almost sixty years ago, is practically identical with one made in the Stoller Report of 1955.

ASPIRATION BIOPSY OF THE KIDNEY IN SYSTEMIC LUPUS ERYTHEMATOSUS.

By R. A. JOSKE[1] AND J. L. STUBBE.

From the Royal Melbourne Hospital and the Walter and Eliza Hall Institute of Medical Research, Melbourne.

SYSTEMIC (disseminated) *lupus erythematosus* was first described by Kaposi in 1859 and for many years was considered to be extremely rare. More recently the number of diagnosed cases has increased greatly, though it is uncertain whether this represents a true increase in frequency or is due to a heightened awareness of the disease by clinicians, aided by more accurate diagnostic methods.

The nature of systemic *lupus erythematosus* has aroused controversy for many years. It was first attributed to tuberculosis by Boeck in 1898, and later to streptococcal infection (Barber, 1915), whilst Denzer and Blumenthal (1937) suggested that an "unknown toxic agent" acted generally upon mesenchymal tissues. This latter concept led to the use of the term "visceral angiitis", which included, besides systemic *lupus erythematosus*, *polyarteritis nodosa* and related conditions.

Present interest in and views upon systemic *lupus erythematosus* result from three factors: the elaboration of the concept of the "collagen diseases" by Klemperer (Klemperer, Pollack and Baehr, 1942; Klemperer, 1947); the introduction of the *lupus erythematosus* cell test (L.E. test) by Hargraves in 1946 and its later modifications by other workers (Hargraves *et alii*, 1948; Hamburger, 1950; Barnes *et alii*, 1950; Moyer and Fisher, 1950; Hargraves, 1954); and finally the demonstration of the therapeutic efficacy of cortisone and related compounds in a disease previously considered almost always fatal (Soffer *et alii*, 1950; Dubois *et alii*, 1952; Soffer *et alii*, 1954).

Several comprehensive reviews of systemic *lupus erythematosus* have appeared in recent years, and together describe the clinical and laboratory features of the disease (Cohen and Cadman, 1953; Dubois, 1953; Gold and Gowing, 1954; Soffer *et alii*, 1954; Cohen, 1954; Harvey *et alii*, 1954). For this reason no detailed review is presented in this paper.

Renal involvement in systemic *lupus erythematosus* was first reported by Brooke in 1895. There is considerable evidence in the literature that it occurs frequently, that patients with clinical renal disease respond poorly to therapy with cortisone and adrenocorticotropic hormone, and that the prognosis of a patient with systemic *lupus erythematosus* thus depends to a considerable extent upon the development of renal and other visceral manifestations of the disease, although this is not entirely supported by the present cases (Soffer and Bader, 1952; Haserick, 1953; Soffer *et alii*, 1954; Tumulty, 1954; Dubois, 1954). Should this be so, knowledge of the frequency and time of occurrence of renal lesions would be of great clinical importance in systemic *lupus erythematosus*, and therefore the present paper reports the results of a study of 11 cases of systemic *lupus erythematosus* in which special attention was paid to the early detection of renal lesions, aspiration biopsy of the kidney being undertaken in all cases. It would appear that no previous survey of the results of renal biopsy in systemic *lupus erythematosus* has yet appeared in the literature (Iversen *et alii*, 1954), although Lister and Baker (1954) have published an isolated case report.

Materials and Methods of Study.

The diagnosis of systemic *lupus erythematosus* was made in all cases upon the clinical features and confirmed in all by the demonstration of L.E. cells in the patients' peripheral blood.

The laboratory tests used were blood examination and estimations of serum albumin, globulin and γ-globulin (Kunkel *et alii*, 1948), serum bilirubin and blood urea, and the cephalin flocculation test. Immunological tests used were the Coombs test (Coombs *et alii*, 1945), Rose's sheep cell agglutination test (Rose *et alii*, 1948), modified by Alexander and de Forest (1954), and tests for hæmagglutinins and hæmolysins (Saint and Gardner, 1952). The L.E. test was performed upon peripheral venous blood by a modification of the method of Magath and Winkle (1952). Hæmoglobin estimations were made by the E.E.L. photoelectric colorimeter.

The urine was examined chemically for protein, and microscopically for erythrocytes, casts and pus cells. Bacteriological cultures were made when indicated by the other findings. Renal function was assessed by urea clearance and concentration-excretion tests (Maxwell, 1944), and by excretion pyelography. Full clearance tests were not used.

In all cases aspiration biopsy of the right kidney was performed with a Franseen needle, the technique previously described (Joske, 1954) being used. No complications of biopsy occurred in this series. The biopsy specimens were fixed immediately in 10% formol-saline, and paraffin-embedded sections stained with hæmatoxylin and eosin, with van Gieson's connective tissue stain, by the periodic acid-Schiff method and by Mallory's phosphotungstic acid-hæmatoxylin method (P.T.A.H.).

[1] Working with the aid of a grant from the National Health and Medical Research Council of Australia.

TABLE I.

Clinical Features of the 11 Cases of Systemic Lupus Erythematosus in which Renal Biopsy was Performed.[1]

Case Number.	Patient's Age. (Years.)	Sex.	Duration of History.	Skin Changes.	Arthropathy.	Nodules.	Muscle Pains.	Fever.	Blood Pressure. (Systolic/Diastolic, Millimetres of Mercury.)	Raynaud's Phenomenon.	Œdema.	Pericarditis.	Endocarditis.	Enlargement of Heart.	Thrombophlebitis.	Hepatomegaly.	Splenomegaly.	Hæmolytic Anæmia.	Purpura.	Pleurisy.	Other Lesions.	Comment.	Maintenance Dose of Cortisone. (Milligrammes per Day.)
I	27	F.	13 months	Scleroderma.	+	0	+	+	170/100	+	+	0	0	0	0	0	0	0	0	0	Œsophageal scleroderma.	Sudden death with pulmonary œdema.	100
II	38	F.	?	+	+	+	+	+	140/85	0	+	0	?	+	+	+	+	+	+	+	Congenital heart disease.	Splenectomy.	150
III	39	F.	38 months	0	+	+	+	+	115/75	0	0	0	0	0	0	+	+	+	+	0	—	Splenectomy.	50
IV	52	M.	36 months	0	+	0	0	+	100/60	0	+	+	0	+	+	+	0	0	0	+	—	—	75
V	29	F.	8 years	+	+	0	+	+	130/90	+	0	0	+	0	0	0	0	0	0	0	—	—	50
VI	32	F.	5 years	+	0	0	+	+	210/140	+	+	0	+	+	0	+	0	0	0	+	—	—	50
VII	42	M.	8 months	0	+	0	+	+	120/75	0	0	0	0	0	0	0	0	0	0	0	Duodenal ulcer.	—	50
VIII	25	F.	36 months	0	+	0	0	+	95/50	+	0	0	0	+	0	+	+	0	0	+	Indolent ulcers on hands.	Sympathectomy.	75
IX	43	F.	5 months	0	+	0	0	+	150/80	0	0	+	0	+	+	+	+	0	0	+	Colloid goitre (non-toxic).	—	100
X	59	F.	30 months	+	+	0	0	+	170/70	0	0	0	0	+	0	+	+	0	0	+	—	—	25
XI	25	F.	4 months	+	+	0	+	+	150/80	0	+	0	0	+	0	+	0	0	0	+	—	Nitrogen mustard therapy.	175

[1] "+", present; "0", not present.

Clinical Features and Clinical Pathology.

The clinical and laboratory findings in these cases closely follow those described elsewhere for systemic *lupus erythematosus*. For convenience they have been summarized in Tables I and II.

The 11 patients comprised nine females and two males, their ages ranging from twenty-five to fifty-nine years. The duration of their disease before renal biopsy varied from four months to eight years. Three patients presented with arthropathy, two with Raynaud's phenomenon, two with chest pain and two with skin changes, whilst the remaining two first developed thrombophlebitis and hæmolytic anæmia respectively.

General symptoms of ill health, such as fever and weight loss, were noted by all the patients, as were arthralgia or muscle pains. However, skin changes were present in only six, one of whom had scleroderma in both arms. None had chronic discoid lupus.

The frequency of abnormal hæmatological findings was striking. The liver was enlarged in eight patients and the spleen in five, and generalized lymphadenopathy was present in five. Nine of the 11 patients had anæmia, and in five cases the Coombs test produced a positive result; two of these patients and four others had demonstrable hæmolysins or hæmagglutinins. Two developed severe hæmolytic anæmia and one required splenectomy; the earlier history of this patient (Case III) has been reported previously by Saint and Gardner (1952). Thrombocytopenic purpura was present in two patients, one of whom (Case II) also came to splenectomy.

Apart from hæmolytic anæmia, there was other laboratory evidence of disturbed or abnormal antibody mechanisms. The L.E. test produced a positive result in all cases, and erythrophagocytosis was demonstrated in eight. The serum γ-globulin content was elevated in five of nine cases in which it was estimated, and the cephalin flocculation test gave a strongly positive result in four and a weakly positive result in two others. Rose's test produced a positive result in two of eight cases. The Wassermann test produced a negative result in all cases.

These results further emphasize the importance of considering systemic *lupus erythematosus* in the differential diagnosis of acquired hæmolytic anæmia, a point recently stressed by de Gruchy (1954), and by Joske and King (1955).

Cardio-Vascular and Renal Disease.

Some cardio-vascular or renal involvement was present in all 11 patients, though it varied greatly in severity from patient to patient. Seven patients had clinical or radiological enlargement of the heart, two had probable Libman-Sacks endocarditis, and a third had acyanotic congenital heart disease (probable ventricular septal defect). Two had pericarditis, one proceeding to cardiac tamponade requiring *paracentesis pericardii*. Frank congestive cardiac failure developed in two cases.

Peripheral vascular disease was also frequent, Raynaud's phenomenon being present in four instances and thrombophlebitis in three.

Seven patients had persistent albuminuria, severe in three of them—two of whom (Cases V and XI) had the nephrotic syndrome—and slight in four. In five cases pus cells or casts were demonstrated by microscopic examination of the urine. Elevation of the blood urea level above 40 milligrammes per 100 millilitres occurred in four cases, in two of which the urea clearance was below 40%.

Treatment and Progress.

The keystone of treatment has been the oral administration of cortisone, the maintenance dose ranging from 25 to 175 milligrammes daily. One patient with the nephrotic

syndrome (Case XI) was also treated with the intravenous administration of nitrogen mustard. Two patients (Cases II and III) required splenectomy. Bilateral cervical sympathectomy was performed in one patient (Case VIII) for the relief of trophic changes and indolent ulcers of the fingers. Other treatment has been that of the complications of the disease, such as cardiac failure or intercurrent infection.

The patients have now been followed for periods varying from six months to four years. Progress of seven of the patients has been good, although all require maintenance therapy with cortisone. Two others (Cases II and VIII) have shown signs of hypercorticism despite salt restriction, and a third (Case VII) has developed clinical and radiological evidence of duodenal ulceration; in these three the dose of cortisone has been reduced and control of symptoms is not complete. One patient (Case I) died suddenly at home of acute pulmonary œdema; no autopsy was possible.

Histological Results of Renal Biopsy.

The outstanding histological finding was the frequency with which abnormal appearances were seen in the fragments obtained by aspiration biopsy of the kidney. Only two of the eleven specimens showed no abnormality (Cases III and VIII), whilst four showed moderate changes (Cases I, II, IV and V) and five severe changes (Cases VI, VII, IX, X and XI). These results are detailed in Table III.

The number of glomeruli in the eleven specimens varied from 4 to 39, the average being 22. In two specimens columnar epithelium was present in the cells lining Bowman's capsule; this is not considered to be abnormal (Finckh and Joske, 1954).

The most frequently seen pathological appearance in the glomeruli was a thickening of the walls of the glomerular capillaries by an eosinophilic material which gave a positive reaction by the periodic acid-Schiff method and stained brown with Mallory's phosphotungstic acid-hæmatoxylin method. In its minimal form this process appeared as small foci throughout the glomerulus, while the glomerular capillaries remained patent and contained erythrocytes (Figure I). In some instances this produced the characteristic "wire-loop" appearance of systemic *lupus erythematosus* (Figure II). In more severely affected glomeruli this process was diffuse throughout the glomerulus, the lobulation of the tufts was lost, the capillary loops were diminished, and the number of nuclei in the glomerulus appeared to be increased (Figure III); polymorphonuclear leucocytes were seen in such glomeruli in two instances. Adhesions between the glomerular tufts and capsule were noted in five biopsies; but the epithelial proliferation with crescent formation such as occurs in glomerulonephritis occurred in only one specimen (Case XI). Glomeruli showing these changes in more than minor degree were slightly wrinkled and shrunken, whilst the eosinophilic material present in the tufts was also seen in the capsule, which was thickened (Figure IV). These changes were present in greater or less degree in seven of the 11 biopsy specimens.

In its most advanced form this process resulted in obliteration of the glomerular vessels and their replacement by a whorl of relatively acellular, avascular tissue, which gave a positive result by the periodic acid-Schiff method, did not stain for collagen by van Gieson's method (Figure V), and stained brown with phosphotungstic acid-hæmatoxylin method. In such glomeruli the capsular space was lost and periglomerular fibrosis was pronounced. These obliterated glomeruli were observed in five of the 11 specimens.

In one specimen (Case XI) the appearances differed from those described above. In this, hyaline glomeruli were frequent (4 of 18 glomeruli); but they stained poorly by the periodic acid-Schiff method and contained collagen. Some of these glomeruli also showed capsular adhesions and crescent formation, the appearances resembling those seen in chronic glomerulonephritis (Figure VI). Other glomeruli in this specimen showed the more frequent increase of periodic acid-Schiff staining material.

TABLE II.—*Salient Laboratory Findings in 11 Cases of Systemic Lupus Erythematosus in which Renal Biopsy was Performed.*[1]

Case Number.	Hæmoglobin Value. (Grammes *per Centum*.)	Red Cells. (Millions per Cubic Millimetre.)	White Cells per Cubic Millimetre.	Erythrocyte Sedimentation Rate.	L.E. Cell Test Result.	Erythrophagocytosis.	Coombs's Test Result.	Rose's Test Result.	Response to Wassermann Test.	Hæmolysins and Hæmagglutinins.	Cephalin Flocculation Test Result.	Serum Albumin Content. (Grammes *per Centum*.)	Serum Globulin Content. (Grammes *per Centum*.)	Serum γ-Globulin Content. (Grammes *per Centum*.)	Albuminuria.	Blood Urea Content. (Milligrammes per 100 Millilitres.)	Urinary Urea Excretion. (Grammes *per Centum*.)	Urea Clearance.	Microscopic Findings in Urine.	Result of Excretion Pyelography.
I	9·1	2·9	5000	13	+	0	0	–	0	–	0	3·8	2·2	1·1	+	24	2·0	120	Debris only.	No abnormality detected.
II	9·4	3·0	6000	61	+	+	0	0	0	+	+++	3·4	2·7	1·9	+	60	2·4	77	Casts, pus cells.	No abnormality detected.
III	10·3	3·7	12,000	100	+	+	–	0	0	+	+++	3·6	2·6	1·7	+	30	2·9	62	No abnormality.	No abnormality detected.
IV	11·3	3·8	10,000	85	+	0	0	0	0	–	+++	4·0	3·0	–	+	23	2·1	115	No abnormality.	No abnormality detected.
V	9·0	3·2	10,000	30	+	+	+	+	0	–	+	3·7	2·7	2·0	0	36	3·4	84	No abnormality.	No abnormality detected.
VI	9·9	3·6	13,000	52	+	+	0	0	0	+	0	1·9	2·1	0·8	+++	78	2·0	27	Casts, pus cells, erythrocytes.	No dye excretion in one hour.
VII	13·7	5·2	11,000	82	+	+	0	0	0	–	+	3·7	2·6	0·9	0	39	3·1	94	A few casts.	No abnormality detected.
VIII	11·1	3·7	3000	92	+	+	0	+	0	+	+++	4·1	4·6	3·4	0	24	–	–	No abnormality.	No abnormality detected.
IX	10·8	3·5	4000	53	+	+	0	0	0	–	0	3·5	2·6	–	0	28	2·3	90	Debris only.	No abnormality detected.
X	13·7	5·2	8000	107	+	0	0	0	0	+	0	4·3	3·0	2·3	+++	54	2·6	35	Pus cells, erythrocytes.	No abnormality detected.
XI	9·6	3·4	7000	95	+	+	+	–	0	+	0	1·7	2·7	1·4	+++	165	–	–	Casts, pus cells.	No abnormality detected.

[1] "+++", strong positive or gross; "+", present or positive; "0", absent or negative; "–", test not performed.

TABLE III.

Summary of Histological Findings of Renal Biopsies in 11 Cases of Systemic Lupus Erythematosus.

Case Number.	Total Glomeruli.	Normal Glomeruli.	Moderately Affected Glomeruli.[1]	Severely Affected Glomeruli.[1]	Tubules.	Interstitial Tissues.	Blood Vessels.
I	9	3	6	—	Normal.	Normal.	Slight arteriolar thickening.
II	4	4	—	—	Casts.	Patchy increase of connective tissue around vessels with some fibroblasts and lymphocytes.	Normal.
III	20	20	—	—	Normal.	Normal.	Normal.
IV	8	—	8	—	Casts and red blood cells. Some tubules atrophic.	Increased with some lymphocytic infiltration.	Normal.
V	32	32	—	—	Normal.	Small areas of fibrosis.	Normal.
VI	33	—	17	16	Areas of dilatation and hypertrophy. Some show fat droplets, hyaline casts.	Considerable fibrosis with some groups of polymorphonuclear leucocytes and lymphocytes.	Normal.
VII	39	8	19	12	Normal.	Slight cellular infiltration.	Three small arteries show angiitis with occlusion by thrombus which is partially organized.
VIII	25	25	—	—	Normal.	Normal.	Normal.
IX	32	15	9	8	Normal.	Normal.	Slight arteriolosclerosis.
X	19	5	7	7	Containing protein casts.	Patchy increase of fibrous tissue with some lymphocytes and plasma cells.	Normal.
XI	18	6	8 (Crescent formation present)	4	Dilatation. Casts.	Increased, with foci of lymphocytic infiltration.	Small artery and some arterioles hyaline and grossly thickened.

[1] "Moderately affected" = slight to moderately severe basement membrane thickenings in tufts with moderate obstruction to blood flow (Figures I and III); "severely affected" = severe obstruction to blood flow in capillaries or complete ischæmia (Figures IV and V).

Tubular changes were not gross. Casts were noted in five specimens, and many of them had the same staining reactions as the abnormal material seen in glomeruli (Figure IV). Gross tubular dilatation was present in one specimen (Case X), in which glomerular changes were severe (Figure VII). In most of the biopsies small thickenings were present in the basement membranes of the tubules, and these stained by the periodic acid-Schiff method.

Interstitial fibrosis was observed in six biopsies, although in one it was largely confined to the renal medulla. In six biopsies collections of leucocytes, chiefly lymphocytes, were present, usually lying near abnormal glomeruli (Figure IV). Vascular changes varied. Some intimal thickening of small arteries was present in two specimens (Figure VIII), one of which (Case VII) showed thromboangiitis. Arteriolar changes were observed in four biopsy specimens, three from patients with severe glomerular changes. The walls of these arterioles usually stained by the periodic acid-Schiff method, and they lay near similarly affected glomeruli. No vascular abnormalities were observed in seven biopsies.

Discussion.

In their classical paper upon the pathology of systemic *lupus erythematosus*, Klemperer and his colleagues (1941) showed the characteristic lesion in this disease to be fibrinoid degeneration of collagen. In the light of this work, and the recent discussions of the histochemistry of fibrinoid by Altshuler and Argenine (1949), by Glynn and Loewi (1952), and by Pearse (1953), the present results could well be due to fibrinoid change occurring at scattered points throughout the kidney. In the advanced avascular lesions (Figure V), ischæmia due to vascular obstruction may also have occurred.

The origin of the polysaccharide in fibrinoid in systemic *lupus erythematosus* is not certainly known. Partridge (1948) has provided evidence that collagen in connective tissue exists as a collagen-polysaccharide complex, and Consden *et alii* (1952) have shown fibrinoid material to contain polysaccharide. Kellgren (1952) has suggested that the primary lesion in rheumatoid arthritis (in which fibrinoid change frequently occurs) may be a disorder of this complex. On the other hand, Glegg *et alii* (1953) have found only small quantities of carbohydrates in collagen fibres, and it is therefore possible that the polysaccharides are secondarily deposited in or upon disordered collagen. Gueft and Laufer (1954) considered that fibrinoid in systemic *lupus erythematosus* resulted from the degradation of a nucleo-protein deposited from the blood in the walls of blood vessels. Several workers have reported that the serum contents of hexosamine and mucoprotein are frequently increased in systemic *lupus erythematosus* (Boas and Soffer, 1951; Greenspan, 1954), and there is evidence that some substance of polysaccharide nature is required in the production of the L.E. cell phenomenon (Wright *et alii*, 1954). Finally, Bollet *et alii* (1954) have demonstrated hexosamine synthesis by connective tissue *in vitro* in tissue culture.

The relation between these changes in mucoprotein metabolism and the abnormal antibody state of systemic *lupus erythematosus* is also unexplained. However, it is of interest that serum γ-globulin contains moderate amounts of hexosamine, so that deposition of γ-globulin upon collagen (as in an antigen-antibody reaction) might make the latter stainable by the periodic acid-Schiff method.

No detailed correlation of the clinical and pathological findings in the present series of cases has been made, for biopsy has so far been performed in only a small number of cases, and the clinical picture of systemic *lupus erythematosus* is notoriously variable. However, there was general agreement between the clinical and pathological observations. The three biopsies showing the most severe changes were obtained from the three patients with considerable albuminuria and elevation of the blood urea level (Cases VI, X and XI). The two biopsy specimens showing no abnormality (Cases III and VIII) were obtained from patients with only minor cardio-vascular-renal involvement. On the other hand, there was no apparent relation between hypertension and histological abnormalities in the kidney, and in addition considerable structural renal

damage was shown by biopsy in two patients without other evidence of renal damage (Cases VII and IX).

The role of renal biopsy in clinical medicine is still undetermined, and it must be strongly emphasized that this technique should not be employed for routine diagnosis, which is more conveniently made by simpler methods. Nevertheless, it is thought that renal biopsy may prove to be a useful method of clinical investigation of diffuse vascular diseases such as systemic *lupus erythematosus* and the Kimmelstiel-Wilson nephropathy of *diabetes mellitus*. In the present cases it is hoped by study of further patients and their long-term follow-up to elucidate the natural history of renal lesions in systemic *lupus erythematosus* and to determine both their prognostic significance and whether or not they respond to cortisone therapy.

Summary.

1. Aspiration biopsy of the kidney was employed in a study of 11 patients with systemic *lupus erythematosus*.

2. The clinical features of the cases were diverse, but cardio-vascular-renal disease was present in all to a greater or less degree. Two patients had the nephrotic syndrome.

3. Nine of the 11 biopsy specimens showed abnormal appearances, gross changes being present in five. The most frequent change was an increase of eosinophilic material in the glomeruli, having the histochemical characters of fibrinoid, and resulting in obliteration of glomerular tuft capillaries. In one specimen proliferation of the capsular epithelium was present.

4. There was a general but not a precise correlation between the severity of the clinical and histological changes.

5. It is suggested that renal biopsy may be of value in the clinical investigation of systemic *lupus erythematosus* and may provide valuable evidence in the making of a prognosis by the detection of otherwise inapparent renal manifestations of this disease. It may also be of help in assessing the response to therapy.

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Legends to Illustrations.

FIGURE I.—Aspiration biopsy of the kidney from a male patient, aged fifty-two years, with a three years' history of systemic *lupus erythematosus* (Case IV). This glomerulus shows scattered foci of eosinophilic material staining by the periodic acid-Schiff method, but the glomerular capillaries remain patent. (Periodic-acid-Schiff stain, × 350.)

FIGURE II.—Renal biopsy from a female patient, aged thirty-two years, with the nephrotic syndrome due to systemic *lupus erythematosus* (Case VI). This glomerulus shows thickening of the tufts with wire-looping and obliteration of capillaries. (Hæmatoxylin and eosin stain, × 350.)

FIGURE III.—Renal biopsy from a female patient, aged thirty-nine years, with systemic *lupus erythematosus* (Case III). The glomeruli are more severely affected, and appear slightly shrunken, with a considerable increase in the amount of periodic acid-Schiff staining material in the glomerulus and the basement membrane of Bowman's capsule. (Periodic acid-Schiff stain, × 350.)

FIGURE IV.—Renal biopsy from a female patient, aged fifty-nine years, with systemic *lupus erythematosus* (Case X). The glomerulus is shrunken and the capillary network is lost. There is thickening of Bowman's capsule. A dilated tubule containing a cast of periodic acid-Schiff staining material is present, and there is infiltration of the interstitial tissue by leucocytes. (Periodic acid-Schiff stain, × 350.)

FIGURE V.—Renal biopsy from a male patient, aged forty-two years, with systemic *lupus erythematosus* (Case VII). The structure of this glomerulus is lost and the capsular space is obliterated. (Periodic acid-Schiff stain, × 350.)

FIGURE VI.—Renal biopsy from a female patient, aged twenty-five years, with the nephrotic syndrome due to systemic *lupus erythematosus* (Case XI). The glomerular tufts are thickened, and there is proliferation of the epithelial cells of Bowman's capsule with capsular adhesions. The appearances resemble those of glomerulo-nephritis. (Hæmatoxylin and eosin stain, × 350.)

FIGURE VII.—Renal biopsy from a female patient, aged fifty-nine years, with systemic *lupus erythematosus* (Case X). There is thickening of the walls of the glomerular capillaries, and capsular adhesions are present. The adjacent tubules are grossly dilated. (Weigert and van Gieson stain, × 350.)

FIGURE VIII.—Renal biopsy from a female patient, aged twenty-five years, with systemic *lupus erythematosus* (Case VIII). The small artery shown has considerable intimal thickening, and the arterial wall stains by the periodic acid-Schiff method. (Periodic acid-Schiff stain, × 350.)

CHLORAMPHENICOL AND APLASTIC ANÆMIA.

By ROBERT G. SHAW AND JOHN A. McLEAN,
Alfred Hospital, Melbourne.

WITHIN the last four years there have been numerous reports of fatal bone marrow aplasia associated with chloramphenicol therapy. The dangers of this drug have been realized more fully in America than in this country, and in 1954 the Council on Pharmacy and Chemistry of the American Medical Association (1954) adopted the following statement:

> Because of the occurrence of serious and fatal blood dyscrasias it is advisable to restrict the use of chloramphenicol to the treatment of typhoid fever and other serious infectious diseases caused by organisms controlled by chloramphenicol but resistant to other antibiotics or other forms of treatment.

Whilst there were obvious difficulties in establishing a causal relationship between the drug and a blood disease in a particular patient, the cumulative evidence was highly suggestive and was particularly strong in those instances in which the patient's blood count was known before treatment commenced. The papers of Rich *et alii* (1950), of Volini (1950) and of Ley (1953) were examples of such studies. In addition a clinical experiment was reported by Krakoff (1955). His stated aim was to see whether chloramphenicol had a cytotoxic effect on malignant cells; but the method has provided excellent evidence of its depressant action on human hæmatopoietic tissue. Four patients in the terminal phases of disseminated carcinoma were subjected to full hæmatological examination including bone marrow studies. They were then treated with chloramphenicol in doses higher than those normally used therapeutically. Whilst receiving chloramphenicol, all four patients showed a disappearance of reticulocytes, with subsequent recovery after it was withdrawn. In three cases the drug was stopped because of painful glossitis; however, in the fourth case severe anæmia developed with the hæmoglobin value falling to 6·5 grammes per 100 millilitres. Very severe thrombocytopenia and leucopenia also occurred, and the myeloid cells of the bone marrow showed nuclear and cytoplasmic vacuolation. All these features reverted to normal on withdrawal of the drug, and a subsequent test dose of 0·5 gramme had no effect on the blood count. The patient was then given a further course of chloramphenicol at a dosage similar to the first course, and again severe leucopenia, thrombocytopenia and anæmia occurred, with immediate recovery on cessation of administration of the drug.

The present paper emphasizes the American Medical Association's warning, and reports seven cases encountered in Melbourne in the last twelve months (see Table I). All these patients developed aplastic anæmia following chloramphenicol therapy, and six of them died, the seventh recovering after more than 90 blood transfusions.

Reports of Cases.

CASE I.—A boy, aged six years, developed what was stated to be sinusitis and was treated with chloramphenicol. It was the first drug exhibited, and he received a total of 3·5 grammes over a period of one week, representing a dose rate of nine milligrammes per kilogram per day. There was nothing significant in his past or family history.

Approximately six weeks after the course of chloramphenicol finished, he was noticed to be bruising rather badly; but this was not regarded seriously until about twelve to fourteen weeks after withdrawal of the drug, when, in association with more severe bruising, he developed a petechial rash. This remained until his admission to hospital four months after completion of therapy.

On his admission to hospital the patient was a healthy-looking boy except for bruising and a petechial rash over the legs and buttocks. No other abnormalities were detected at that time. Laboratory findings on his admission to hospital were as follows. The hæmoglobin value was 9·9 grammes per 100 millilitres and the total leucocyte count was 3500 per cubic millimetre; platelets numbered 40,000 per cubic millimetre. A differential leucocyte count gave the following results: neutrophile cells numbered 70, lymphocytes 3255, monocytes 105 and eosinophile cells 70, all per cubic millimetre. Examination of a blood film revealed severe granulocytepenia and a pronounced reduction in the number of platelets. Examination of sternal marrow revealed that it was of greatly diminished cellularity, and most of the cells present were lymphocytes. The results of a differential marrow count are shown in Table II.

The boy's clinical course may be summarized as follows. He survived a total of eighty-eight days in hospital, and during this time epistaxis and bleeding from the gums occurred almost continually. He had a remittent fever throughout, and about three weeks after his admission his temperature rose to 104° F. and he developed a vesicular eruption which was regarded as varicella. This rash later became hæmorrhagic. It is of interest that concomitantly with the very high temperature and the vesicular rash his total leucocyte count rose to 10,000 per cubic millimetre, but this rise was entirely confined to lymphocytes; the number of neutrophile cells at no time rose above 160 per cubic millimetre throughout his illness (Figure I). Later he developed episodes of hæmaturia, hæmatemesis and bleeding *per rectum*. Recurrent epistaxis and bleeding from the gums became more troublesome. Fresh crops of petechiæ appeared at intervals. One week before his death he developed very severe intermittent headache, and the day before death he lapsed into coma with signs of a right-sided cerebral hæmorrhage. Under cover of a direct blood transfusion, burr holes were made; but the neurosurgeon was unable to evacuate blood clot. The patient's condition deteriorated further, and he died five hours later.

The treatment given was as follows. The patient received cortisone, 100 milligrammes per day, for the first five weeks in hospital, together with folic acid, 10 milligrammes daily, and ascorbic acid, 250 milligrammes daily. There was no response in his blood count and, in fact, his platelet count fell from 40,000 per cubic millimetre on his admission to hospital to 5000 per cubic millimetre within a few days,

TABLE I.

Case Number.	Sex.	Age. (Years.)	Disease Treated.	Chloramphenicol.		Daily Dosage. (Grammes.)	Period from End of Course to First Symptom.	Result.
				Total Dose. (Grammes.)	Number of Courses.			
I	M.	6	Sinusitis.	3·5	1	0·5	6 weeks.	Death.
II	F.	6	Pertussis.	30 at least	1	1·0 to 1·5	5 or 6 weeks.	Death.
III	M.	53	Sinusitis and bronchitis.	16·0	3	0·75	8 weeks.	Death.
IV	F.	38	Influenza.	21·0	2	1·5	8 weeks.	Death.
V	M.	46	Influenza.	9·0	2	—	8 weeks.	Recovery.
VI	F.	6	Recurrent upper respiratory tract infection and "earache".	—	5	Last course 0·5	3 or 4 weeks after fourth course and prior to fifth course.	Death.
VII	F.	53	*Otitis media.*	8·0[1]	2	1·0	7 weeks.	Death.

[1] Also, five years ago, had four grammes for cystitis and several doses of one gramme since that time.

and subsequently platelets became extremely scanty on the film. His hæmoglobin level varied with blood transfusion, by which he received a total of five litres of bank blood and seven transfusions by the direct method, polythene tubing and a Julian Smith pump being used. In the week before his death he received a direct transfusion on alternate days (Figure II).

At autopsy the principal macroscopic findings were hæmorrhages in all serous surfaces, and an extensive hæmorrhage into the right occipital lobe, with surrounding petechial hæmorrhage in the brain substance. There was also considerable hæmorrhage in the mucosa of the stomach, small bowel and renal pelves. The bone marrow of vertebræ, sternum and ribs was a pale pinkish-brown colour. The liver, spleen and lymph nodes were normal in appearance.

Histological examination of bone marrow from the sternum and vertebræ showed it to be completely aplastic. There were scattered reticulo-endothelial cells packed with hæmosiderin and a few lymphocytes. There were occasional lymphoid follicles (Figure III). The remainder consisted of fat spaces. The histological findings in other organs were normal.

CASE II.—A girl, aged six years, was referred from the country, with the history that three months previously she had developed pertussis. She had suffered from measles three years previously. There was no significant family history. The pertussis was treated with chloramphenicol, and there is no record of her having received other drugs. It was stated that she received 250 milligrammes of chloramphenicol every four hours for "approximately one month". This, of course, was a very large dose, and even if it was assumed that the two night doses were omitted, she received a total of about 30 grammes. She was stated to be "never really well" after this. The presenting symptom was extreme lethargy, which commenced about three weeks before her admission to hospital—that is, five weeks after the course of chloramphenicol had been finished. Ten days before her admission she developed large bruises on the trunk and legs, and for three days there had been vomiting, a "red and blue rash", and bleeding from the gums.

On her admission to hospital she was pale, listless and slightly icteric. Her temperature was 103° F. Bruising and purpura were evident on her legs. No enlargement of the spleen, liver or lymph nodes was detected, and there were no other significant findings. Laboratory findings on her admission to hospital were as follows. The hæmoglobin value was 5·1 grammes per 100 millilitres, the total leucocyte count was 3700 per cubic millimetre and platelets numbered 95,000 per cubic millimetre. (Platelets were reported as absent three days later.) The bleeding time was greater than ten minutes. A report on the sternal marrow was as follows:

> There were very few nucleated cells and the majority appeared to be lymphocytes. Others had the appearance of stem cells. No erythyroid or platelet precursors were seen and no myeloid precursors other than occasional eosinophils.

The patient's clinical course may be summarized as follows. She survived for six days in hospital. During this time she was hyperpyrexial, the temperature rising to 106° F. on the day of death. Progress blood counts showed no change except in the platelets, which were entirely absent in later counts. She bled from the gums persistently, developed hæmaturia and finally lapsed into coma and died.

The treatment given was as follows. She was transfused with a total two litres of bank blood. She also received ACTH (30 milligrammes daily for the last two days only), vitamin *C* and vitamin *K* (five milligrammes orally daily) and vitamin *B* group; penicillin (10,000,000 units daily) and "Achromycin" (150 milligrammes every six hours) were also given.

TABLE II.

Differential Bone Marrow Count (Percentages).

Cells.	Case I.	Case III.	Case VII.
Myeloblasts	1·5	—	1·0
Premyelocytes	1·0	0·25	1·0
Myelocytes: neutrophile	3·0	1·0	2·0
Myelocytes: eosinophile	3·0	0·5	—
Metamyelocytes: neutrophile	1·0	2·0	4·5
Neutrophile cells: band	1·0	—	—
Neutrophile cells: segmented	1·5	1·25	9·5
Eosinophile cells	3·0	1·0	0·5
Lymphocytes	54·5	82·5	68·0
Plasma cells	0·5	8·5	0·5
Monocytes	—	0·25	2·5
Reticulum cells	2·0	1·5	—
Hæmocytoblasts	1·0	—	—
Pronormoblasts	11·0	—	2·0
Normoblasts	15·0	1·25	8·5

At autopsy there were numerous petechiæ and ecchymoses of the trunk and limbs, ecchymoses on the dura and small subarachnoid hæmorrhages. There were numerous small cerebral hæmorrhages up to three millimetres in diameter in the white matter and internal capsule. None were seen in the brain stem. There were widespread small hæmorrhages in the heart, lungs, alimentary canal, adrenal glands and perirenal tissues. The liver was pale, but of normal size and consistency.

Histological examination showed that the bone marrow of the sternum and ribs was aplastic; a few scattered lymphocytes and plasma cells only were seen (Figure IV). There were no significant findings on microscopic examination of the other organs.

CASE III.—A man, aged fifty-three years, was employed as a fitter. For many years he was stated to have had a peptic ulcer and epigastric pain which was relieved by alkalis. There had been no symptoms of this in the year before his death. There was no significant family history. About

twelve months before his admission to hospital he first complained of a painful swelling of the nose and a condition diagnosed as sinusitis. He was treated with "Aureomycin", in an unstated amount. Shortly afterwards a recurrence of the symptoms was treated with the first of three courses of chloramphenicol. Later recurrences of sinusitis and a "penicillin-resistant bronchial infection" were treated with further courses of chloramphenicol on two occasions. The total dose for all three courses was 64 capsules—that is, a total of 16 grammes administered as three courses over a period of six months. Two months after the last course finished he presented to his doctor again with a two weeks' history of weakness, epistaxis and hæmoptysis. He was seen to have generalized ecchymoses and was immediately referred to hospital.

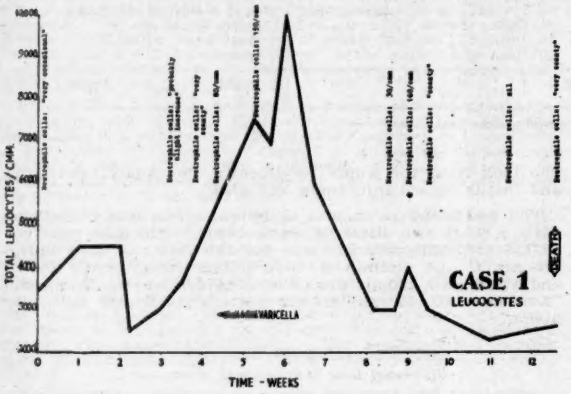

FIGURE I.

On the patient's admission to hospital, petechial hæmorrhages of the gums, legs and trunk were seen. The liver and spleen were stated to be enlarged, but the lymph nodes were not. Hess's test produced a positive result. There were no other abnormal findings on clinical examination. The laboratory findings on his admission to hospital were as follows. The hæmoglobin value was 7·1 grammes per 100 millilitres, the colour index was 1·0, the total leucocyte count was 3000 per cubic millimetre, and reticulocytes numbered less than 1% of the erythrocytes. A differential leucocyte count showed that the neutrophile cells numbered 450, lymphocytes 2280 and monocytes 270, all per cubic millimetre. In a blood film the erythrocytes showed well hæmoglobinized cells with moderate anisocytosis. There were occasional macrocytes. The number of platelets was considerably reduced. The sternal marrow findings were as follows:

> The bone was firm and the marrow very poorly cellular. Erythropoiesis was normoblastic with an erythroid:myeloid ratio of 1:9. The majority of the cells present were mature lymphocytes. No megakaryocytes were seen. There was marked erythroid and myeloid hypoplasia.

The results of a differential marrow count are shown in Table II. The fæcal stercobilinogen content was found to be 2000 milligrammes per 100 millilitres. The examination was repeated five days later, when the result was 1200 milligrammes per 100 millilitres, whilst ten days later again it was 1000 milligrammes per 100 millilitres. Unfortunately no further estimations were made.

The patient's subsequent course may be summarized as follows. He survived for fifty-two days in hospital and was given transfusions on four occasions, receiving a total of 5·5 litres of bank blood. He was also treated with vitamins B_{12} and C and with folic acid. He was given penicillin when he developed pyrexia associated with an infected transfusion site and later with an abscess in the thigh. During the illness the blood picture remained substantially unaltered. The hæmoglobin value varied with transfusions and the occurrence of melæna. The total leucocyte count was usually about 3000 per cubic millimetre except for one rise to 9000 per cubic millimetre, but this rise was entirely in the lymphocytes. The number of neutrophile cells never rose above 650 per cubic millimetre, and the proportion of reticulocytes was never greater than 1%. Platelets were always extremely scanty on the film (Figure V). The patient passed two melæna stools soon after his admission to hospital and another three weeks before his death. The final episode was the rapid development of widespread skin hæmorrhages and the symptoms and signs of a cerebral hæmorrhage, from which he died within a few hours.

At the autopsy, widespread petechial hæmorrhages were found over the mucosal and serous surfaces. An old healed duodenal ulcer was present, with pinpoint hæmorrhages of the gastric mucosa. Gross pulmonary œdema was seen. The vertebral marrow appeared normal. There were patches of hæmorrhage in the leptomeninges and scattered hæmorrhages thoughout the white matter. The liver was normal, and no other abnormalities were noted.

Histological examination of the liver revealed an increase of fibrous tissue in the portal tracts and some infiltration with small round cells. There were some small irregular islands of hyperplastic liver cells. The bone marrow of the ribs and vertebræ was aplastic. However, there were a few scattered islands of hyperplasia consisting of primitive cells which were probably of myeloid type, but their precise identification was not possible (Figures VI and VII).

Case IV.—A married woman, aged thirty-eight years, who was otherwise in good health and who had no significant past history, developed a febrile illness diagnosed as influenza. She was at bed rest for one week, during which time she was treated with "A.P.C." and chloramphenicol, the latter being given at the rate of 1·5 grammes per day for this period. One month later she felt very tired and had an elevated temperature for one day. She again took chloramphenicol at the rate of 1·5 grammes per day for one week, and since then she had been feeling tired. Eight weeks later she first noticed bruising on the body. Laboratory findings at that time were as follows. The total leucocyte count was 2200 per cubic millimetre; a differential count showed that neutrophile cells numbered 44, band forms 22, lymphocytes 2068, monocytes 44 and eosinophile cells 22, all per cubic millimetre. Platelets numbered 10,000 per cubic millimetre. The prothrombin activity was 50% of normal, and the bleeding time was twenty-four minutes.

On the patient's admission to hospital she was found to have a generalized purpuric rash. There were no other significant findings, and no enlargement of the liver, spleen or lymph nodes. A further examination of the peripheral blood gave results similar to those found before her admission to hospital (see above). A bone marrow examination revealed extreme hypoplasia, very few hæmatopoietic cells being present.

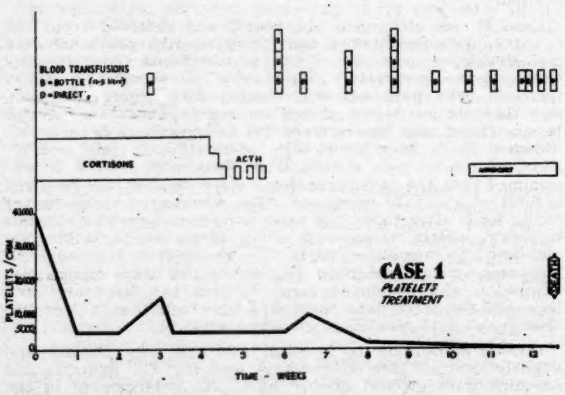

FIGURE II.

The patient's subsequent course may be summarized as follows. She survived for fifty-four days in hospital. Shortly after her admission, menstruation commenced, and this developed into profuse menorrhagia requiring transfusion with 1·5 litres of bank blood. She was then reasonably well for about one month, although the blood count did not improve. When menstruation commenced again, an excessive and continuing hæmorrhage developed, which required repeated blood transfusions. A direct transfusion of blood from a polycythæmic donor resulted in a temporary cessation of bleeding. However, hæmorrhage recommenced and hysterectomy became necessary. This was performed under cover of a direct transfusion with the use of the same technique as in Case I, and the following day the patient collapsed and was noted to be slightly icteric. Her condition rapidly deteriorated and she died.

The available autopsy notes read as follows:

> There was no gross hæmorrhage at the site of the operation or in the abdominal cavity. There was a generalized Cl. welchii infection and a histological examination of the tissues was impossible.

CASE V.—About two years ago a man, aged forty-nine years, who was stated to have had no previous serious illnesses, developed influenza and was treated with a course of chloramphenicol, a total of six grammes being given. There was a relapse ten days later, and a further three grammes of chloramphenicol were administered. Two months after the second course of chloramphenicol he began to feel

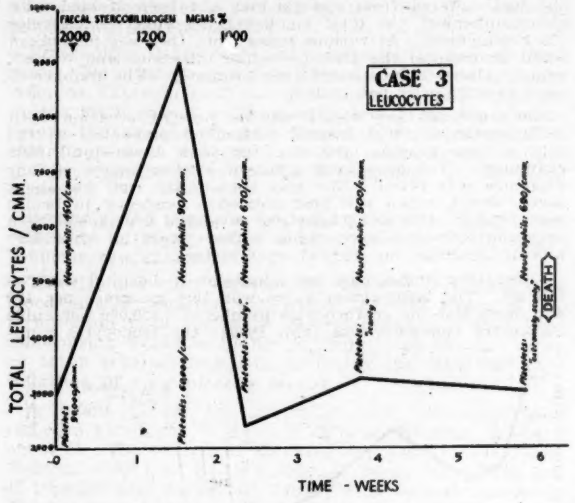

FIGURE V.

unwell and had repeated epistaxis. He also noticed a tendency to bleed freely, and began to complain of pain over the heart.

On examination of the patient six weeks after the commencement of these symptoms—that is, about fifteen weeks after the completion of the second course of chloramphenicol—he was pale and had numerous petechial hæmorrhages scattered over his body and limbs. There was no enlargement of liver, spleen or lymph nodes and no other significant clinical findings. Laboratory findings were as follows. The hæmoglobin value was 6·5 grammes per 100 millilitres, and the erythrocytes numbered 2,400,000 per cubic millimetre (platelets—8000 per cubic millimetre); the total leucocytes numbered 1800 per cubic millimetre, 350 being neutrophile cells. The response to the cephalin flocculation test was negative. The total serum protein content was 6·5 grammes per 100 millilitres (albumin 3·3 grammes, globulin 3·2 grammes, per 100 millilitres), and the serum bilirubin content was 0·9 milligramme per 100 millilitres. A sternal marrow examination revealed very few hæmatopoietic cells in the films.

A diagnosis of aplastic anæmia was made. During the next three weeks the patient was treated with cortisone, 75 milligrammes per day, and he also received two direct blood transfusions and two transfusions of bank blood. As there was improvement in his clinical condition, he returned home and attended a country hospital, where he has been maintained by direct transfusions, receiving more than 90 in the last two years. During most of this time his platelet count has been below 40,000 per cubic millimetre and his total leucocyte count has remained depressed (Figure VIII). He has had a petechial rash and occasional epistaxis, but no serious hæmorrhages. Recurrent minor infections have been controlled with penicillin. In recent weeks these symptoms and signs have greatly decreased, and it would seem reasonable to hope that complete recovery will occur. The most recent blood count of this patient gave the following findings. The hæmoglobin value was 11 grammes per 100 millilitres and the platelets numbered 200,000 per cubic millimetre. The total leucocyte count was 3500 per cubic millimetre, 1505 being neutrophile cells, 1820 lymphocytes and 175 monocytes.

CASE VI.—A girl, aged six years, suffered from recurrent upper respiratory tract infection associated with earache. Ten months prior to her admission to hospital there had been an episode of crystalluria and hæmaturia following sulphonamide therapy (type of sulphonamide unknown). She had received from her mother one aconite tablet a day for five months preceding her illness. Chloramphenicol had been administered in four separate courses for similar illnesses in the preceding five months, the last occasion being five weeks before her admission to hospital. The exact doses given on these occasions were unfortunately not available.

Eight days before her admission to hospital the child developed severe earache with fever and anorexia. She was examined by her local doctor, who noticed bruises over her body. These had been present for several days and had commenced between three and four weeks after the completion of the fourth course of chloramphenicol. The child was then given a further course of chloramphenicol, consisting of four 125-milligramme capsules per day for four days (a total of two grammes), by which time she again "seemed well". However, two days later she became pale and listless, and was admitted to hospital.

On examination of the patient, she was found to be pale and had a pulse rate of 100 per minute and a blood pressure of 100 millimetres of mercury, systolic, and 60 millimetres, diastolic. There was a soft systolic apical cardiac bruit. The liver was palpable just below the right costal margin, and the spleen could not be felt. Petechial hæmorrhages were present in the mouth and on the trunk and legs. Laboratory findings on her admission to hospital were as follows. The hæmoglobin value was nine grammes per 100 millilitres and the platelets numbered 40,000 per cubic millimetre. The total leucocytes numbered 4800 per cubic millimetre, 1632 being neutrophile cells and 3168 lymphocytes. Bone marrow biopsy was performed on three occasions. Twice blood only could be obtained, and on the third occasion examination of the films gave the following result:

> A poorly cellular marrow. No myeloid precursors were present and only an occasional neutrophil was seen. Megakaryocytes were absent. Only a very occasional late normoblast was seen. The predominating cell was a mature lymphocyte.

Subsequently a portion of rib was resected, and examination of the marrow revealed "no normal myeloid or erythroid cells".

The patient's subsequent course was as follows. She survived for seventy-seven days after her admission, having

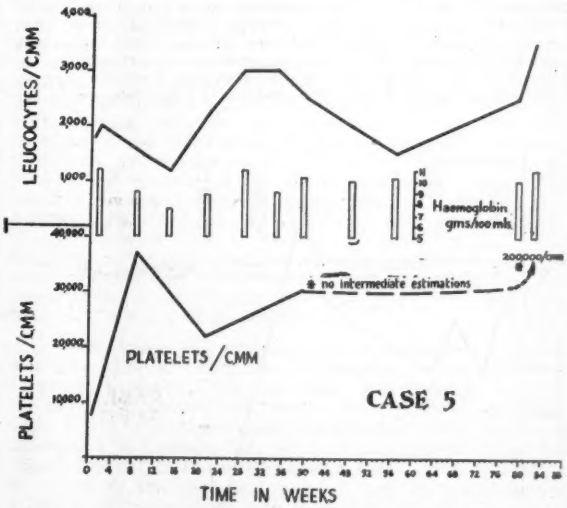

FIGURE VIII.

been in hospital during that period except for three days at home shortly before her death. For the first three weeks the hæmoglobin value and total leucocyte count remained fairly steady, but there was a progressive fall in the number of neutrophile cells, which was 680 per cubic millimetre three weeks after her admission to hospital, and subsequently reached values of 50 to 60 per cubic millimetre (Figure IX). Platelets were reduced in number throughout the illness and in the last weeks were extremely scanty,

being described as "an occasional platelet" or "none". The hæmoglobin value fell with increasing rapidity, requiring frequent blood transfusions (Figure X). Further bruises and fresh crops of widely distributed petechiæ appeared at intervals. Epistaxis and bleeding from the gums occurred repeatedly. She developed a remittent fever with a temperature up to 103° F., and larger bruises occurred over the trunk and limbs, and in the final week she developed hæma-

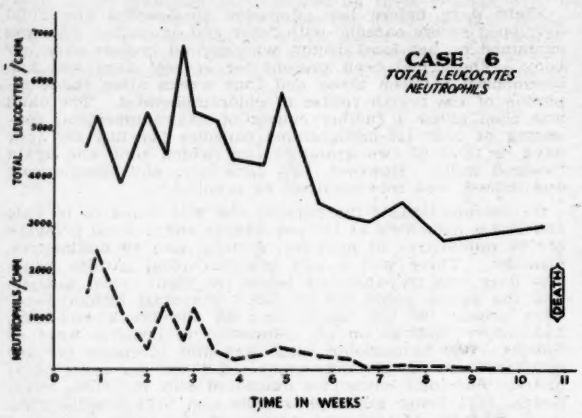

FIGURE IX.

turia and passed melæna stools. Five days before her death, signs of consolidation of the lower lobe of the right lung developed. Pneumonia was the immediate cause of death.

The treatment given was as follows. For the first thirty-six days she received cortisone, 12·5 milligrammes every six hours. This was then changed to "Deltacortef", 10 milligrammes twice a day, which was given until death. Tetracycline, 100 milligrammes three times a day, was given from the time of her admission to hospital until death. She received a total of 14 bottles of bank blood, each containing one mega unit of penicillin.

At autopsy generalized petechial hæmorrhages and multiple bruises were noted. A few petechiæ were seen in the pericardium. The trachea and bronchi contained viscid pink mucoid material. The lower lobe of the right lung was consolidated, and there was organizing pleurisy over it. Altered blood was present in the stomach, and the mucosa was hæmorrhagic. There were petechial hæmorrhages in the

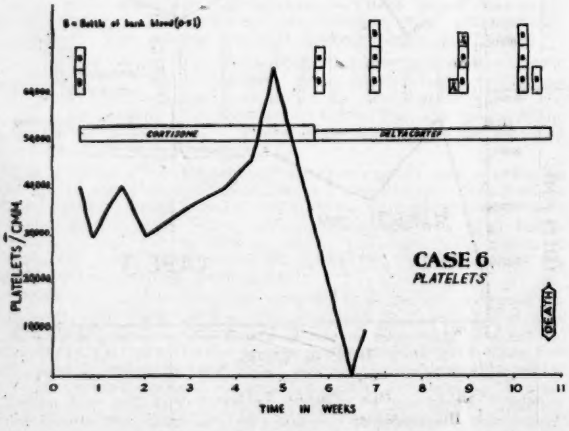

FIGURE X.

intestine. The liver appeared normal. The kidneys were congested, and the pelves, ureters and bladder contained blood clot. The spleen weighed 70 grammes and was congested and firm. Lymph nodes were everywhere small and dark red in colour. The vertebral marrow was greasy and pale in colour, and that in the ribs consisted of faintly pink mucoid material.

Histological examination showed that the bone marrow of the ribs and vertebræ was aplastic, and consisted of fat spaces with scattered lymphocytes and hæmosiderin-laden reticulum cells. In the liver, some congestion and fatty change were the only abnormalities found.

There were no other significant findings.

CASE VII.—A married woman, aged fifty-three years, gave a family history of various allergic phenomena. Her father was asthmatic and sensitive to aspirin. Both her father and sister were stated to have developed exfoliative dermatitis following injections of gold. The patient herself had dermatographia, but no other history of hypersensitivity. She stated that about five years prior to the present illness she had suffered from cystitis and had been treated with chloramphenicol, the total amount being about 16 capsules (four grammes). At various times since then she had taken small amounts of the drug for minor infections and "colds", usually about four capsules (one gramme). The number of such courses was not stated.

She consulted her doctor on the present occasion with *otitis media* and was treated with chloramphenicol at the rate of one gramme per day for four days (total four grammes). Ten days later a second similar course of four grammes was given. She was then fairly well for about seven weeks, when she first noticed a tendency to bruise very readily. One week later she developed a petechial rash over the body and lower limbs. There were no other significant findings on clinical examination.

Laboratory findings on her admission to hospital were as follows. The hæmoglobin value was 10·4 grammes per 100 millilitres and the erythrocytes numbered 3,920,000 per cubic millimetre (platelets less than 1000); the leucocytes num-

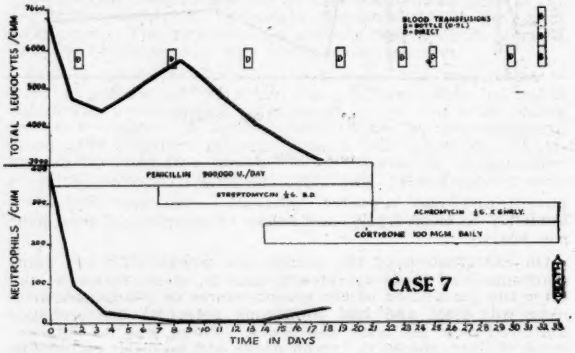

FIGURE XI.

bered 6800 per cubic millimetre, 374 being neutrophile cells, 68 eosinophile cells, 6290 lymphocytes and 68 monocytes. Examination of a blood film showed that the erythrocytes were well hæmoglobinized and slight anisocytosis was present; reticulocytes numbered less than 1%. Gross neutropenia and a relative and absolute lymphocytosis with some lobulated forms were present. No blast cells were seen. The bleeding time (Duke) was 20 minutes, the clotting time (Lee and White) was eight minutes, and clot retraction was absent. A bone marrow examination was made. Smears of sternal marrow were cellular, but 91% of the nucleated cells were mature lymphocytes and plasma cells. No megakaryocytes were seen, and only very occasional myeloid cells.

The patient's clinical course may be summarized as follows. She developed a persistent fever, and except for some symptomatic improvement after blood transfusions her condition steadily deteriorated. A severe bleeding tendency developed, and three weeks after her admission to hospital she began to pass melæna stools and bright blood *per rectum*. She also had hæmatemesis and bleeding from the gums and left ear. Death occurred on the thirty-second day after her admission to hospital. Throughout the illness the platelet count did not rise above 2300 per cubic millimetre, and the neutrophile cell count, having fallen rapidly to 30 per cubic millimetre shortly after her admission to hospital, did not again rise (Figure XI).

No autopsy was obtained.

The following treatment was given. Initially she received "Anahæmin" and penicillin (900,000 units per day), and one week later she was given streptomycin, 0·5 grain twice a day, in addition. Two weeks after her admission to hospital

cortisone therapy was commenced in a dosage of 100 milligrammes per day. Three weeks after her admission to hospital the antibiotic treatment was changed to "Achromycin", 250 milligrammes every six hours, and vitamin *K* was given intravenously. During her thirty-two days in hospital, seven direct transfusions and one transfusion of bank blood were given.

Discussion.

It seems reasonable to assume that chloramphenicol was the ætiological agent in the seven cases of aplastic anæmia presented in this paper. It is recognized that lack of knowledge of the hæmatological pattern before the drug was used precludes a decisive answer, but the following points must be emphasized.

First, other drugs were not implicated in any of these cases. No other drug was exhibited to four patients, one received "Aureomycin" one year prior to symptoms, and in the sixth case a sulphonamide was given ten months before the present illness. Therefore, in each instance, chloramphenicol was the only drug administered within the few months prior to the development of the blood dyscrasia.

Secondly, the illnesses treated by the drug were either relatively trivial or not of a type associated with severe bone marrow changes.

Thirdly, and most significantly, the first symptom of a blood disease occurred within five to eight weeks of the termination of a course of chloramphenicol. This time relationship would be highly unlikely to be due to chance on seven separate occasions involving the otherwise rare condition of bone marrow aplasia.

A latent period of this order has frequently been recorded by others in cases of aplasia following chloramphenicol. The reports of Hawkins and Lederer (1952), of Wolman (1952), of Hollis (1953), of Johnstone (1954) and of Pickard and Rosenblatt (1954) may be mentioned. In Welch's second series (Welch, 1954) there were 29 cases of severe blood dyscrasias in patients who had received chloramphenicol alone, and of these, eight showed the first symptom in the first month after the drug had been stopped, and the other 21 within three months. Hodgkinson (1954) reported 31 cases of blood dyscrasias occurring after chloramphenicol; eight of these patients became ill whilst receiving the drug, but 23 after latent intervals of up to five months. With regard to the latent period, the present series is seen to conform to the usually reported pattern.

In view of the common and severe depression of platelets in these patients, it is not surprising that the first manifestation of a serious blood dyscrasia is usually evidence of a bleeding tendency. Patients reported by others frequently showed this, such as those of Dornhorst (1954), Ersley (1953), Johnstone (1954) and Pickard and Rosenblatt (1954). Of Hodgkinson's 31 patients, 26 had bleeding episodes. In all the cases of the present series the first symptom was either excessive bruising or a petechial rash, or, in Case V, recurrent epistaxis. There was a prodromal stage of pronounced lethargy in Case II.

There is also a small group of reports associating jaundice with the administration of chloramphenicol, and this has sometimes been the initial symptom. Hawkins and Lederer's two patients already referred to showed jaundice which subsequently cleared, and this was followed by the development of aplastic anæmia. There was no autopsy evidence of liver damage. Eight of Hodgkinson's patients were jaundiced, and another patient, although not jaundiced, at autopsy was found to have scarring of the liver, which was due to recent large areas of confluent hepatic necrosis. Wolman (1952) reported a case in which the initial symptom of jaundice lasted only two days and the patient subsequently died of aplastic anæmia. At autopsy the liver was fatty, and examination revealed infiltration of the portal tracts.

In the present series, the slight icterus noticed in Case II was probably a consequence of the very large bruises and hæmatomata, and in Case IV it was terminal and associated with a *Clostridium welchii* infection. However, the patient in Case III, although not jaundiced, did present microscopic evidence of fibrosis and infiltration of the portal tracts and some hyperplastic islands of liver cells. Liver function tests were not performed, but in view of the very high fæcal stercobilinogen excretion his liver function was probably not impaired, at least in the earlier part of the illness. The real significance of this finding in the liver in Case III is not clear.

Other blood dyscrasias have been detected before symptoms appear by frequent blood counts whilst the patient is undergoing treatment in hospital (Volini, 1950). The few reports of patients with severe hypoplasia who have recovered have usually been in this category. Frequent estimations of reticulocytes, platelets, leucocytes and hæmoglobin value would be required, and even then fatal aplasia might not be prevented. The first fatal case reported, that of Rich (1950), was that of a patient who developed aplastic anæmia whilst in hospital under observation.

At the present time there are no distinctive features which might allow a prediction that a certain type of patient would succumb more readily than the average. Welch (1954) attempted to deal with this statistically, and came to the conclusion that the most susceptible group were females aged under ten years. However, his conclusion probably went beyond the limits of his evidence, because he did not know the sex and age composition of the population at risk from which his cases were drawn. It may well be that chloramphenicol was used more frequently in the treatment of children aged under ten years than in that of adults. He further stated that prolonged or intermittent dosage was more hazardous, and the same criticism applies. He did not know the relative frequency with which the various methods of administration were used in the population from which the cases came. Intermittent or prolonged dosage appears more frequently in case reports of bone marrow dyscrasia; but such knowledge is of little practical help, since these disorders can occur with small doses and single courses.

The question of the incidence of these serious blood disorders is one which has not been satisfactorily solved. The drug is in wide use in general practice, and the population at risk is consequently impossible to estimate with a reasonable degree of accuracy. Attempts at a numerical estimate (for example, editorial, 1952) are mere speculation, and there has been no adequate statistical attack on the problem. The surveys of Lewis and Welch *et alii* (1952) and of Welch *et alii* (1954), whilst providing much valuable information, did lack the vital requirement of defining the population at risk. However, their total numbers were quite large. In the two surveys they found a total of 70 cases of aplastic anæmia in patients who had received chloramphenicol alone, and a further 149 cases in patients who had received both chloramphenicol and a variety of other drugs. The incidence of complications of chloramphenicol therapy is obviously low, but it is certainly not negligible, and the importance of considering the possibility is emphasized by the occurrence of these seven cases.

In view of this, the establishment of a safe dose schedule would be of great importance. Hodgkinson, after reviewing 31 cases of severe blood dyscrasias, attempted to set safe limits of total dosage and duration of treatment. However, eight of his patients had received less than these maximum doses, and in Cases I, III and V of the present series the dosage fell within the range suggested as "safe". Attention is drawn to the fact that a total dose of 3·5 grammes (Case I) was associated with fatal aplasia.

The conclusion that there is no absolutely safe dose schedule is inescapable. The risk of aplasia, though small, appears to be always present when the drug is used.

The mechanism by which the drug produces the observed changes in the blood and bone marrow is not clear. As well as aplasia, other changes have been reported. However, a frank hæmolytic process does not appear to have been seen, and therefore Case III of the present series is especially interesting. The exceedingly high fæcal stercobilinogen figures found on three occasions could indicate a hæmolytic

process. The absence of blood regeneration suggests that if this did occur, the bone marrow had already lost its capacity to respond except in the very small areas described in the case report. Similar isolated islands of intense activity in an otherwise aplastic marrow have been recognized in chronic benzene poisoning (Mallory *et alii*, 1939), and the appearance in this patient was strikingly similar. However, the real significance of this is obscure.

It has been suggested that there may be a sensitization phenomenon in these patients. This explanation would assist to explain the fact that quite large numbers of people can take the drug without untoward effect, and that the cases in which a dyscrasia does develop show no recognizable common feature. Welch, for example, as a result of his "nationwide survey", came to the conclusion that "the extremely low incidence argues against an inherent toxicity of the drug". Use of the term "hypersensitivity" carries the connotation of a mechanism which is either understood or at least analogous to other clinical states about which there is some knowledge. But that is an unwarranted assumption at present, and whilst the patients whose histories are recorded in this paper, and others whose histories are quoted, may have been unduly susceptible to the drug, such a statement implies nothing concerning an actual mechanism of action. Krakoff's experiment (Krakoff, 1955) was particularly apposite. He failed to produce any effects with a small challenging dose after he had already produced gross changes in the peripheral blood of the same patient with larger doses, and was again able to produce the same changes with large doses following the small ineffective dose. Such a pattern of response could not be termed a sensitization by any accepted definition of that term.

It is interesting that no evidence of extramedullary hæmatopoiesis has been reported in cases of aplasia due to chloramphenicol, and none was seen in the present series. The reticulo-endothelial system, except for the bone marrow, showed few changes if any. The central problem, in fact, appears to be the mechanism by which complete and continuing aplasia exists long after withdrawal of the drug. It is not so much a matter of the destruction of cells already present as of the prolonged abeyance of hæmatopoiesis. That this is not necessarily permanent is exemplified by Case V, in which recovery occurred after two years of unremitting blood transfusion; but in the vast majority of cases the patient succumbs as a result of incessant bleeding, or of the lack of an effective cellular response to invading microorganisms.

It follows that the treatment of these patients is very difficult. Transfusion is, of course, essential, but rarely affects the ultimate result. Cortisone and ACTH appear to have no detectable effect. Continuous antibiotic cover is indicated, but may not prevent fatal infection (Case VI).

In conclusion, reference should be made to the clinical use of chloramphenicol, although no effort is made here to discuss the indications fully. On the evidence presented, it is suggested that the warning issued by the American Medical Association concerning the use of this drug in treating minor infection is justified. The frequent use of chloramphenicol in the treatment of pertussis could also be subjected to criticism. Tolhurst, Buckle and Williams (1955) state that no antibiotic is completely effective in the treatment of this condition, and they recommend the use of other broad-spectrum antibiotics.

It is advocated that regular leucocyte, platelet and reticulocyte counts be carried out on all patients receiving chloramphenicol. In some cases it has been possible to withdraw the drug before irreversible changes have developed.

Summary.

Seven cases of aplastic anæmia following the administration of chloramphenicol are reported in detail. Six of these were fatal, and in the seventh recovery occurred after a prolonged illness and more than 90 blood transfusions.

The significance of the association of chloramphenicol administration and the subsequent development of aplastic anæmia has been discussed, and the suggestion is made that, in accordance with a recommendation of the Council on Pharmacy and Chemistry of the American Medical Association (1954), its use be confined to the treatment of serious infections with organisms resistant to the other antibiotics and other forms of treatment. In addition, frequent leucocyte and platelet counts should be made when the drug is used, as there is some indication that a fall in the number of neutrophile cells or of platelets may occur before irreversible changes are established.

Acknowledgements.

We wish to thank the following physicians for providing details of cases: Dr. L. Hurley, Dr. C. McRae, Dr. C. H. Trelfall, Dr. L. P. Wait, Dr. Stanley Williams. We are indebted to Dr. J. D. Hicks, Dr. A. Williams and Dr. A. V. Jackson for autopsy reports and histological preparations. Thanks are due to Mr. T. O'Connor for the photography. Finally, grateful acknowledgement is made to Dr. A. V. Jackson and Dr. Ross Hayes for helpful advice and criticism.

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Legends to Illustrations.

FIGURE III.—Case I: Lymphoid follicle in an otherwise aplastic marrow. (× 80.)

FIGURE IV.—Case II: Marrow showing fat spaces with erythrocytes and lymphocytes only. (× 360.)

FIGURE VI.—Case III: Aplastic marrow showing island of hyperplasia consisting of primitive myeloid elements. (× 28.)

FIGURE VII.—Case III: Island shown in Figure VI. (× 360.)

Reviews.

An Atlas of Diseases of the Eye. Compiled by E. S. Perkins, M.B., F.R.C.S., and Peter Hansell, M.R.C.S., F.R.P.S., with a foreword by Sir Stewart Duke-Elder, K.C.V.O., M.A., D.Sc., Ph.D., M.D., F.R.C.S.; 1957. London: J. and A. Churchill, Limited. 10½" × 8½", pp. 101, with illustrations in colour. Price: 42s.

THIS "Atlas of the Diseases of the Eye" is an admirable book which will be invaluable to the graduate embarking on his career as an ophthalmic surgeon. The selection of material is good, there being a fairly wide representation of ocular disease; the description of the various plates is concise but of sufficient length to give an understanding of the conditions depicted; the plates themselves are well produced, practically all being in colour; and finally, unlike other available atlases, the cost is more than reasonable and well within the reach of all who feel the need of such a volume.

The work is the product of the Institute of Ophthalmology in London, assisted financially by Roche Products Proprietary, Limited, who are to be commended on their generosity and foresight; without this assistance the cost of this volume would have been prohibitive.

It is certain that this volume will be helpful to those studying for the diploma in ophthalmology and also useful to the ophthalmologist engaged in the teaching of undergraduates in these days when classes are large and clinical material is often scarce.

Roentgen Signs in Clinical Diagnosis. By Isadore Meschan, M.A., M.D., with the assistance of R. M. F. Farrar-Meschan, M.B., B.S. (Melbourne); 1956. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 10¾" × 7", pp. 1058, with 2216 illustrations on 780 figures. Price: £10.

A LARGE volume entitled "Roentgen Signs in Clinical Diagnosis" has been written for students and "residents" in radiology and practising physicians; however, it could be studied with advantage by all specialists in the subject. The method of approach is by three routes: (*a*) presentation of normal radiographic anatomy, (*b*) presentation of the Röntgen signs which make up the basic concepts of Röntgen abnormality, and (*c*) the organization of findings in (*a*) and (*b*) to reach a diagnosis or to suggest a number of clinical possibilities.

The book opens with useful chapters on necessary apparatus, the technique of film production and protective measures. The author stresses the need for study of adequate clinical notes which should cover such points as age, sex, race, familial tendency and occupation. Bone development and ossification are lucidly set out, and the use of diagrams and films is rather an advantage in a work designed for teaching. The classification of bone pathology is simple, compared with the usual cumbersome one adopted by authors. Radiolucent and radioopaque bone classification facilitates reference. Skull, sinus and spinal conditions are described in simple language, and these descriptions are well worth close study. Chest radiology, both by fluoroscopy and by film, is gone into most thoroughly, and the author looks on the former as an aid in localizing lesions rather than as an accurate diagnostic procedure. A routine method of examination should be adopted, and fourteen points are laid down to assure a complete survey of the chest. The author issues a warning against giving opinions on pulmonary fibrosis without an adequate history. It is pointed out that silicosis is rarely seen under five years of dust exposure, and that some forms of pneumonokoniosis give no characteristic signs in the film. In the section on the heart all the modern methods of investigation are described. The value of the preliminary film in all abdominal and renal conditions cannot be belittled, and the points to be looked for are enumerated. In renal radiography it is often possible to demonstrate abnormalities of the suprarenal glands. The gastro-intestinal tract examination and the technique employed are set forth in detail. A full index makes reference easy, and an adequate bibliography is appended to each chapter.

The book is an excellent one and can be recommended to all workers in radiology.

Plague. By R. Pollitzer, M.D.; 1954. Geneva: World Health Organization. 9½" × 6½", pp. 698, with 40 illustrations, one in colour. Price: £3 5s. (cloth-bound), £3 (paper-bound).

THIS comprehensive monograph on plague is the most important work on the subject to appear for many years. Its publication is especially welcome on account of recent and important advances in the knowledge of plague, particularly in regard to vector and rat control and to therapy. The author, who writes with authority derived from many years of plague control and research in China, is remembered as a joint author, with Wu Lien-teh, J. W. H. Chun and C. Y. Wu, of a well known though now out-dated manual on plague published in 1936. He is to be congratulated upon a work of outstanding usefulness.

The book is composed of ten studies on the various aspects of plague, which originally appeared in the *Bulletin of the World Health Organization*, together with two annexes. Together these provide a well-planned and detailed account of all features of the subject. The studies deal successively with the history and present distribution of plague, the bacillus, immunology, pathology, laboratory diagnosis, hosts, insect vectors, clinical aspects, epidemiology and control and prevention. The first annexe consists of a detailed list of plague reservoirs and vectors, and the second, written by F. G. A. M. Smit, of the British Museum, of a well-illustrated section on the identification of fleas. Each chapter is based on a critical survey of the published work relating to it, and has its own list of references. The length and content of such lists indicate the exhaustive study undertaken by the author, and are a valuable feature of the book.

This excellent book is indispensable to public health workers and to those interested in any of the many aspects of plague. As the most important reference work available on its subject, it should find a place in every medical library.

Disease in Infancy and Childhood. By Richard W. B. Ellis, O.B.E., M.A., M.D., F.R.C.P.; Second Edition; 1956. Edinburgh and London: E. and S. Livingstone, Limited. 6" × 10", pp. 717, with 333 illustrations. Price: 50s.

A WARM welcome is assured for this splendid text-book, which appeared first in 1951, was reprinted in 1952, and has now been thoroughly revised and largely rewritten to conform with the changing picture resulting from social changes, improved therapy of infection, widespread adoption of modern techniques, and application in teaching and in practice of the fruits of intensive child study and clinical research.

Statistical evidence is adduced to demonstrate the substantial fall in recent years in illegitimate births in England and Wales and in the neonatal and infant mortality rates. The infant mortality rate is held to be "one index of social progress"; in 1953 the rate had fallen to a level equal to that of the United States of America, but it was still higher than the rates in Sweden, the Netherlands, New Zealand and Australia.

A better understanding of the selection, posology and use of antibiotics has materially improved the treatment of a wide range of infections; and the diminution of prevalence and severity of these diseases, which used to be such a threat to child health, has served to focus more attention on congenital abnormalities and morbid states caused by disorders of nutrition, imbalance of ions, anoxia and other conditions not ætiologically associated with parasites, germs or viruses.

Great advances in the anæsthetic art have paved the way for bolder approaches of surgeons, which may be exemplified by their triumphs in the thoracic cavity and in the cranium. The work of surgeons is based on accurate diagnosis by physicians with the aid of ward and laboratory workers; the methods of investigation are at times involved and have become highly specialized in certain fields.

The author has adopted a conservative attitude towards the prophylaxis of poliomyelitis. The disease remains a

major disabling one of formidable incidence and severity; the recent preparation of a vaccine "offers great hope of more effective control". Another major problem is the prevalence of tuberculosis; intradermal vaccination with the bacillus of Calmette-Guérin has "recently been widely adopted in Great Britain", and it is "now generally considered to be of definite value".

The subject of retrolental fibroplasia, which was not mentioned in the original text, is discussed and described fully in this edition. Four magnificent coloured illustrations are supplied showing the appearances in the fundus of premature babies of normality, and of early, established and advanced retrolental fibroplasia. It is stated that the dangers of prolonged oxygen therapy in prematurity have been recognized.

All these matters and many others are presented admirably in this book, which is a most important one for pædiatricians, general practitioners and all professional people who have any responsibility for the care of sick children. Statistics, graphs, bibliographies and references have been extended and enlarged to include information available in 1955. The coloured figures are faithfully realistic, and the illustrations greatly enhance the text. All concerned with the production of the book have every reason to be satisfied with their efforts, and it is a pleasure to handle and to read it.

Williams: Obstetrics. By Nicholson J. Eastman; Eleventh Edition; 1956. New York: Appleton-Century-Crofts, Incorporated. 10″ × 6¾″, pp. 1222, with illustrations.

"WILLIAMS'S OBSTETRICS" has for long been recognized as a sound text-book on the subject and is now edited by Nicholson J. Eastman, Professor of Obstetrics, Johns Hopkins University.

Of necessity, in a work of this nature the volume becomes very large to handle; but this edition is printed in larger and more legible type on excellent quality paper, with adequate illustrations. New subject matter is contained in particularly good sections dealing with hypotensive drugs, indirect placentography, and retrolental fibroplasia.

An interesting chapter on psychiatric aspects of pregnancy and childbirth has been contributed by Dr. Leo Kanner.

In the discussion on accidental hæmorrhage, anuria has been completely neglected as a complication, and in *placenta prævia* too much space has been allotted to treatment with Willett's scalp traction, Voorhes's bag and Braxton Hicks's version. Surely the modern trend is to decide only between conservative artificial rupture of the membranes and Cæsarean section.

Fibrinogenopenia is very well dealt with, as are diabetes and pregnancy.

The section entitled "Coincidental Complications of Pregnancy" contains a wealth of knowledge and an especially good bibliography.

Forceps application is well illustrated; but many in this country would consider dangerous the various forceps rotations of the posteriorly placed head, except in very expert hands.

In the chapter on breech delivery, the Lovesett technique for the delivery of extended arms is surprisingly omitted. It is this more than anything else which has revolutionized breech deliveries and resulted in a much reduced fœtal mortality.

One of the outstanding good points in this book is the reference made, in each subject, to review articles in easily accessible journals. This makes for ease of follow-up by the student, and his reading can be greatly extended.

"Williams: Obstetrics" can be recommended for teaching purposes or as a reliable reference book for young graduates. In its present edition it is now modern as well as comprehensive.

Psychoanalysis of Behavior. By Sandor Rado, M.D., D.P.Sc.; 1956. New York, London: Grune and Stratton, Incorporated. 9¾″ × 6″, pp. 394, with illustrations. Price: $7.75.

IN this volume Sandor Rado, formerly Clinical Professor of Psychiatry and a director of the Psychoanalytic Clinic for Training and Research at Columbia University, has brought together 28 papers, all of which have been published in various German, English and American scientific periodicals and books in one period from 1922 to 1956. The arrangement is chronological, with a division into three sections corresponding to three chronological periods. The first group of papers published between 1922 and 1933 are described as "Contributions to Classical Psychodynamics". The heading for the second group, which were published between 1933 and 1942, is "Quest for a Basic Conceptual Scheme". Papers published between 1946 and 1956 are grouped under the heading "Development of Adaptational Psychodynamics". Four papers of the third period have been revised in order to make a few additions and "to remove some initial uncertainties of a slowly developing terminology". Otherwise the papers are substantially unchanged from their original form and are published here without comment.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Surgeons All", by Harvey Graham, M.D., with a foreword by Oliver St. John Gogarty; Second Edition; 1956. London: Rich and Cowan, Limited. 9¼″ × 6¼″, pp. 459, with many illustrations. Price: 25s.

A popular history of surgery.

"Whitla's Dictionary of Medical Treatment", Ninth Edition, by R. S. Allison, V.R.D., M.D., F.R.C.P., D.P.M., and T. H. Crozier, M.D., B.Sc., F.R.C.P., and twenty-six contributors; 1957. London: Baillière, Tindall and Cox, Limited. 9¼″ × 6¼″, pp. 868. Price: 52s. 6d.

The first edition was published in 1891. Since the eighth edition, published in 1938, the book has been entirely rewritten.

"Munro Kerr's Operative Obstetrics", Sixth Edition, by J. Chassar Moir, Hon.LL.D. (Queen's University, Ontario), M.A., M.D., F.R.C.S. (Ed.), F.R.C.O.G.; 1956. London: Baillière, Tindall and Cox, Limited. 10″ × 6¾″, pp. 1018, with many illustrations. Price: 105s.

A well-established book (first published in 1908) now under new editorship.

"Lecture Notes on the Use of the Microscope", by R. Baker, M.C., M.A., B.Sc., M.B., B.S.; Second Edition; 1956. Oxford: Blackwell Scientific Publications. 7¼″ × 5″, pp. 83, with tables and illustrations. Price: 7s. 6d.

Intended as a basic elementary text for students who use the microscope.

"Human Disease", by A. E. Clark-Kennedy; 1957. Victoria: Penguin Books Proprietary, Limited. 7″ × 4¼″, pp. 267. Price: 5s. 6d.

A popular account of "the reactions of the individual to the risks which may overcome him".

"Low-Fat Cookery", by Evelyn S. Stead and Gloria K. Warren, with an introduction by Eugene A. Stead, junior, M.D., and James V. Warren, M.D.; 1956. New York, Toronto, London: McGraw-Hill Book Company, Incorporated. 8¼″ × 5¼″, pp. 200, with illustrations by Frank Sieminski. Price: $3.95.

Contains 150 recipes for those who wish to reduce the fat content of their diet.

"World Trends in Cardiology: Volume V, Instrumental Methods in Cardiac Diagnosis", edited by Louis N. Katz, M.D., and Arthur S. Cain, junior, M.D.; 1956. New York: Paul B. Hoeber, Incorporated. 8¼″ × 5¼″, pp. 110, with illustrations of figures. Price: $3.85.

Papers presented at the second World Congress of Cardiology. They are in three groups devoted to diagnostic instrumentation, to memorials to masters in electrocardiography and to electrocardiography and ballistocardiography.

"Administrative Medicine: Transactions of the Fourth Conference, Princeton, N.J., October 31, November 1 and 2, 1955", edited by George S. Stevenson, M.D.; 1956. New York: The Josiah Macy, Jr. Foundation. 9¼″ × 6¼″, pp. 251, with illustrations of figures. Price: $4.25.

Contains papers and discussions on estimating needs for medical and related services, on the health insurance plan of Greater New York, on the assessment of quality of services in a group practice prepayment plan, on assessing the effectiveness of programmes in operation, on the quality of medical care, on assessment of the quality of services in the Boston metropolitan area, and on British experience in appraising the quality of medical care.

The Medical Journal of Australia

SATURDAY, MARCH 16, 1957.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE HOBART CONGRESS.

> When you have a great harbour and a mountain you have the place for a city of surpassing beauty; and when, in addition, you have the splendid fortune to found your city in the Georgian era all riches are added. Hobart has such richness. . . .

So writes Clive Turnbull in a little book, "The Charm of Hobart", which is recommended reading for all Congress-minded doctors and their wives.[1] Hobart is to be the scene of the Tenth Session of the Australasian Medical Congress (British Medical Association) from March 1 to 7, 1958, and Turnbull's affectionate text, with Kenneth Jack's admirable illustrations, provides a good introduction for those who do not know Hobart and a pleasant reminder for those who do. Since the Fourth Session of Congress was held in Hobart in 1934, each of Australia's capital cities has in turn been invaded by members of the British Medical Association and their wives. The numbers have steadily increased, as have the scope and standard of the scientific presentations and the many other activities that make up a Congress. An energetic committee in Hobart is now working hard to follow in this tradition, and we may confidently predict a happy result, even though the Tasmanians have smaller resources in the way of numbers of members of the British Medical Association, suitable meeting places, accommodation *et cetera* than their colleagues in the larger mainland States. The main meeting place will be the University of Tasmania, which the University authorities have kindly made available. The President of Congress is Dr. J. B. G. Muir. The Honorary Secretary is Dr. Franklin R. Fay, and the address of the Congress office for correspondence is Box 812H, G.P.O., Hobart. Preliminary details of the Congress are set out under the heading "Congress Notes" elsewhere in this issue. We commend them to our readers' careful attention. Early submission of application forms for membership (these are obtainable from the Local State Secretaries, to whom they should be returned) will greatly help the organizers, and those who wish to submit papers for the meetings of the scientific Sections are urged to get in touch with the Honorary Secretaries of Sections as soon as possible.

A medical congress has two main aspects, the one scientific, the other social; medico-political matters are excluded. The scientific programme centres around the plenary and sectional meetings, which are intended to cater for the medical profession as a whole rather than for specialist groups as such. Thus much of the material presented, including that at the meetings of Sections, should appeal to general practitioners and others who lack specialized knowledge of the subject under consideration. There is, of course, still room for presentation of original work and for meetings of specialists, and the attendance of specialists is desired just as much as that of general practitioners. The essential thought is that here is an opportunity for exchange of ideas on a broad professional basis and a breaking down of the barriers which not only divide medical knowledge into artificial water-tight compartments, but segregate into mutually exclusive groups the members of a single profession to whom unity is of great value. For this reason the social side of Congress is important in its own right. It is, of course, an opportunity to have a good time, which no one begrudges for a moment; and Hobart has much to offer in this direction. At the same time it offers a golden opportunity for the renewal of old friendships and the making of new—an invaluable thing for a profession which tends more and more to coalesce into groups with narrow interests, and which is scattered through a large continent. It is pleasing to know that we shall have some representatives from New Zealand at Hobart in 1958—we hope the number will be substantial; and we look forward to the making of new bonds between members of our profession from all over Australia and New Zealand as they rediscover the island on which Abel Tasman first set foot some three hundred and fifteen years ago. No more attractive bidding could be desired than that with which Dr. Thomas Wood closes the chapter on Tasmania in his book "Cobbers":

> You will find a sun to warm you, wild life worth any one's homage, the King's English spoken, and the best of good fellows to welcome you.
>
> Give them my love and say I told you to go.

EDITORIAL CHANGES.

AT the meeting of the Board of Directors of the Australasian Medical Publishing Company, Limited, held on February 21, 1957, it was decided that Dr. Mervyn Archdall, who has been Editor of THE MEDICAL JOURNAL OF AUSTRALIA since 1930, should proceed on six months' long-service leave to commence on March 1, 1957. On August 31, 1957, Dr. Archdall will retire from the position of Editor. The Directors appointed Dr. Ronald Winton Acting Editor as from March 1, 1957.

[1] "The Charm of Hobart", illustrated by Kenneth Jack, written by Clive Turnbull, descriptive paragraphs by Wilfrid H. Hudspeth; Ure Smith Miniature Series 4; 1949. Sydney: Ure Smith Proprietary, Limited.

Current Comment.

TELEVISION.

SINCE the subject of television was last raised in these columns (November 21, 1953) television has come to Australia, and during the intervening three years much more information has become available about it. The future of television in our whole commercial world is a vitally interesting study with which we are all concerned. The technical advances which television engineers continue to make valuable contributions as a scientific tool. As such, television concerns the medical profession; and as man's history with regard to major technical advances is not always glorious, then a wise modifying influence is always needed. Since the British Association at its meeting in Sheffield last year discussed the effects of television in an academic manner, then perhaps the medical profession should be well acquainted with them.

The use of closed circuit television for a variety of purposes is now well established, and most of these have an association with medical matters, which is beneficial. Televising surgical operations and relaying experimental and practical manœuvres have proved to be of great value, in that many manœuvres may be watched in greater comfort, with a better view, and with much less embarrassment to the performers. The generalized use of colour will, of course, enhance this, but even with black and white a great deal can be learnt.

An American university has now commenced television classes for some students as a method of overcoming shortage of lecture room space. This is no doubt a dangerous practice if used as a replacement, but as a complement it has a great value. The years have shown that television can be a window upon the world, and can stimulate imagination and interest in most unlikely subjects. An example of this is the sustained interest in England in archæology, which sprang from the archæological programme "Animal, Vegetable and Mineral". The use of television to replace the direct human eye in such operations as viewing furnaces and surveying the sea bed should meet with our approval. The use of television in some countries to control traffic in known danger spots is one which should be expanded whenever possible, as indeed is the potentiality of the television camera for viewing in situations where it is too dark for the human eye to function.

With regard to domestic television many points have come to light, although much investigation continues, some of it *mentis gratissimus error*. Television headache is increasing among children. This is usually due to indiscriminate viewing in a dark room. The flickering screen is viewed from too near, and from an angle. Provided that the screen is viewed from slightly above and from a distance of not less than six feet in a room with a dim distracting light, no harm seems likely to result. One should point out, however, that although eye damage will not be caused, latent eye abnormalities may well become overt. The sociological aspects of television are quite often the concern of our profession in that we are consulted about it; if only for that reason one or two points should be touched upon. Children, who are perpetual gluttons, need some discipline. Like the gourmand, they live for some years, at least, with no sagacity. In this phase they are the uttermost of gullibility. Television may well interfere with homework and keep children out of bed, but on the other hand it may just as well keep children from the streets. The habits of the television audience have been studied by the British Broadcasting Corporation and a paper was read at the British Association meeting. When the television set is first bought, the family become avid viewers, watching the whole of every evening's transmission. This phase, which includes mass viewing with the neighbours and the buying of television cups and saucers, lasts several years. The whole structure of family life is altered. It becomes much more closely knit, but on the other hand conversation languishes and may in fact be forbidden. Other pastimes and hobbies are forgotten, and thinking, on the whole, ceases. Between five and ten years after the commencement of viewing, selectivity appears, and hobbies are resumed. At this stage the set lies idle in the evening awaiting a programme of particular interest.

This state of affairs perhaps needs some further analysis. The survey was of English people watching the equivalent of the Australian Broadcasting Commission programmes, and hence may not be strictly applicable to commercial television or to another country. However, people do not vary much from continent to continent, and the impact of television most certainly does not. In the mass viewing phase everything which is heard and seen is absorbed, very often abjectly. The mass attitude to television is one of credulous pantheism and is therefore inherently a bad thing. It can be alleviated by a proper, reasoned and wise transmission, or made worse by a commercial and technical ochlocracy. However, it seems that an English community will eventually right itself and recommence thinking. What is not so reassuring is the compulsive power of television which establishes a hegemony. This hegemony is all too often of a mediocre standard, and thus over-simplifies and lowers the standards of both activity and behaviour of a nation. This cannot make us easy in our minds about the future. The presentation of medical subjects therefore is fraught with great danger. It is most probable that any given subject will not be covered fully, and that a witch hunt may ensue. As with the cinema, there seems to be some inhibition which distorts contemporary life; and the valuable programme which uplifts a nation, although it exists, is all too rare. It seems true that our technical growth has outgrown our wisdom. The note of caution raised in this journal three years ago should be reiterated, because in a world where people appear to think less, and where standards fall, the medical profession has vital interest. The unthinking public battening for amusement on such things as mediocre television will run into our surgeries all the more, and we shall meet the problem from the other side in the form of even more anxiety and dissatisfaction.

THE MANAGEMENT OF GASTRIC ULCER.

"IN view of the ever-present possibility that gastric ulceration may be malignant, many maintain that surgery is warranted immediately, while others feel that surgery should be employed for ulcers suspected of being malignant after having undergone a short period of medical management." In an attempt to evaluate the validity of the second of these concepts, J. H. Geddes, W. N. Downe, and J. A. Taylor[1] have reviewed the management of 100 patients suffering from gastric ulcer. In this series surgery was carried out as soon as possible on all patients with (*a*) recurrent ulceration, (*b*) ulceration on the greater curvature, (*c*) pyloric obstruction, (*d*) hæmorrhage, and (*e*) perforation. All others underwent three to six weeks of intensive medical management in hospital, and during this period an attempt was made to arrive at an opinion concerning the question of malignancy of the ulcer. The most important factor considered in deciding the nature of the ulcer was the clinical and radiological evidence of healing. Other aids were the degree of gastric acidity, the gastroscopic appearance, and the findings on cytological examination of gastric washings. At the end of three weeks patients again underwent X-ray examination. If healing was complete, the ulcer was considered benign. If healing was incomplete, medical treatment was continued for three more weeks and was followed by another barium meal X-ray examination. If this examination showed continued evidence of ulceration, the ulcer was considered malignant and surgery recommended. In this series, 30 patients were treated surgically and 70 were treated medically. Of the 30 surgically treated patients considered to have a malignant neoplasm, only one was found to have ulceration of a malignant neoplasm of the stomach. All living patients

[1] *Canad. M. A. J.*, October 1, 1956.

were followed up for two years or more. Twenty-three of the 30 surgically treated patients are still living, as are 57 of the 70 medically treated patients.

In the light of these results and of their own and others' general experience, Geddes *et alii* then discuss the question of how gastric ulceration should be treated. Some believe that the solution is partial gastrectomy for everyone with gastric ulceration; others demur, realizing that only a small percentage of gastric ulcers are malignant and that surgical treatment carries a significant mortality rate. Geddes and his colleagues point out that benign ulcer should heal in three weeks with intensive hospital medical management; if it does not heal, it is probably malignant and should be surgically removed. They go on to state that while this method is not infallible, and many benign ulcers are resected, very few malignant ulcers escape detection and surgical removal. Radiological and clinical evidence of rapid healing has been the only reliable method, short of surgery, for distinguishing between benign and malignant ulceration. Symptoms are unreliable in distinguishing between benign and malignant ulcers: weight loss may occur in association with benign ulceration as well as with the malignant variety, and there is nothing distinctive about the character of pain in either type. However, persistent pain experienced by a patient receiving adequate medical therapy is a fairly reliable indication that the ulcer is malignant. There is ample evidence to show that 40% to 50% of gastric carcinomata occur in the presence of free acid, and that 5% to 10% of benign ulcers occur in the absence of free hydrochloric acid. Moreover, histamine achlorhydria occurs in approximately one out of four people in the gastric cancer age group. Therefore, gastric analysis is of little value in distinguishing between benign and malignant ulceration. It has been supposed that gastric ulceration occurring in the presence of duodenal ulcer is almost invariably benign, and this has been the impression of Geddes *et alii*; the impression was confirmed in this series. However, the presence of a coexistent duodenal ulcer should not lull one into a false sense of security.

The opinion of an experienced gastroscopist is a valuable aid in determining the exact nature of an ulcer, when this evidence is based on the visual appearance and biopsy. Although positive biopsy results are diagnostic, negative results are often misleading. Ulcers on the greater curvature of the stomach and at the cardia are usually regarded as malignant until proved otherwise. However, six such ulcers in this series were benign. Prepyloric ulcers are not often malignant in the experience of Geddes *et alii*; although the vast majority of all ulcers occur in the prepyloric area and on the lesser curvature. The most reliable method of determining the nature of gastric ulceration is, as the advocates of surgery contend, by microscopic examination, but even the pathologist is not infallible. It has to be recognized that the surgical approach to all gastric ulcers involves an element of risk every bit as serious as does the more conservative approach. There is an immediate surgical mortality rate of 2% to 5%, as well as the 10% severe morbidity rate. Also, the best reported five-year survival rate for those with malignant ulceration is only 15% to 30%. In contrast, the conservative approach yields comparable results. Approximately 50% of all patients originally managed conservatively come to operation because of suspected malignant change, recurrent ulceration, hæmorrhage, obstruction or perforation, but few miss operation who would have benefited by it. Geddes *et alii* conclude that with careful evaluation of gastric ulcer, in a patient kept in hospital over a three to six weeks' period, an error of 3% (or less) can be expected. Partial gastrectomy, the surgical treatment of choice for gastric ulcers, has a comparable mortality rate, and in addition a definite morbidity rate of 10%. Therefore surgery is not the treatment of choice for all gastric ulcers, at any rate before an earnest and careful attempt has been made to determine whether benignity or malignancy exists. Of the 70 patients treated medically in this series, all have been followed up for two years or more, and none has developed any evidence of gastric malignancy. Only one of 20 patients coming to surgery had carcinoma of the stomach. Twenty patients have died since the diagnosis of gastric ulcer was made, none of gastric neoplasm. It is concluded that treatment of patients with gastric ulceration should be individualized, and that surgery is not warranted for all patients with a gastric ulcer.

ANGINA PECTORIS AND DISODIUM ETHYLENE TETRAACETIC ACID.

TREATMENT of *angina pectoris* has, up to the present, been mainly palliative. While the cause is obscure and the associated pathological processes are far from clear, any direct approach to a cure has seemed hopeless. It is interesting now to find an entirely new approach to the subject. In some way the atheromatous changes in the walls of the coronary vessels are correlated with accumulation of cholesterol and calcium salts. The chelating agent disodium ethylene diamine tetraacetic acid has been used for some time for removing metastatic calcium in renal calcinosis and other conditions. N. E. Clarke, C. N. Clarke and R. E. Mosher[1] have used prolonged intravenous injections of disodium ethylene diamine tetraacetic acid (EDTA) in the treatment of 20 patients with carefully confirmed, progressive *angina pectoris*. The authors suggest that the sequence of events in developing atheromatous changes in blood vessel walls is somewhat as follows. The inner walls of the arteries become damaged for some reason, and the reparative processes go wrong because of changes in the mucoid ground substances. This material, high in polysaccharide and chondroitin sulphate content, is capable of fixing large quantities of calcium and cholesterol. EDTA has a greater affinity for the calcium than the mucoid substances and removes it by chelation. A detailed account is given of the progress of each of the 20 patients treated with EDTA. One patient did not benefit from the injections, developed convulsions and died about three weeks after commencing treatment. He had very extensive atheromatous changes all over the body and probably died from a cerebral embolism, possibly due to a loosened plaque. The other 19 patients showed remarkable clinical improvement, in most cases recovering their ability to work after being almost completely disabled. In six patients the abnormal electrocardiograms reverted to normal patterns.

The treatment was rather drastic. A solution of five grammes of EDTA in 500 millilitres of saline solution was given intravenously and repeated for ten to fifteen days; an interval of one or two weeks was followed by further infusions if necessary. Then five daily infusions were given every six months. Toxic reactions were not found to be severe. Mild gastro-intestinal symptoms, nausea and diarrhœa were common, with occasionally severe epigastric pain. There is apparently a risk of calcium embolism as has been found in other uses of EDTA.

If other investigators have as good results with this treatment as is claimed by Clarke, Clarke and Mosher in their series of cases, then indeed there is hope for the patient with severe *angina pectoris*.

SOME DANGERS IN THE IRON LUNG.

WHEN mechanical artificial respiration was applied to human patients, not as an emergency measure but in protracted use, as for paralysis of the respiratory muscles arising from poliomyelitis, physiologists were not slow to draw attention to possible dangers following unskilled operation. Respiration, they pointed out, had other functions than the supply of oxygen, a very important one being the fine adjustment of the hydrogen ion concentration in the blood. As J. S. Haldane and his school demonstrated, a rise of 0·25% atmosphere in carbon dioxide tension in alveolar air and therefore in the arterial blood will lead to a doubling of pulmonary ventilation, so sensitive are the medullary respiratory centres.

[1] *Am. J. M. Sc.*, December, 1956.

There has been recently published by W. Droese, H. Stolley and H. Cailloud[1] the results of a careful study of disturbances in the acid-base equilibrium during the treatment of poliomyelitis patients in the iron lung. This research emanates from the Children's Hospital of the University of Munich and was carried out by three investigators. It is pointed out that in nearly all cases acidosis, through heaping up of carbon dioxide, is well established when the patients are first placed in the iron lung; but once the artificial respiration has been put into action, the tendency is for alkalosis, due to over-ventilation, to manifest itself. Respiratory acidosis produces a rise in the bicarbonate concentration of the blood, and a number of factors can be discovered at work: (i) Displacement of anions in the system erythrocytes-plasma; bicarbonate is given up by the blood cells and a corresponding amount of chlorine ions is absorbed. (ii) Displacement of cations in the system tissue cells-tissue fluid; hydrogen ions are absorbed by the cells, whilst potassium and sodium ions are sent out into the tissue fluid. (iii) Increased back-absorption of bicarbonate in the renal tubules and increased elimination of chlorine. In such respiratory acidosis there is a marked augmentation in the volume of the urine. These authors, for example, found 1400 to 2500 cubic centimetres daily of urine in the presence of respiratory acidosis, but 900 to 1000 cubic centimetres when ventilation was adequate. This diuresis occurs even when sweating is profuse. In the presence of respiratory alkalosis, which over-ventilation produces, reverse adjustments take place in order to maintain normal blood reaction. The authors give the warning that maladjusted artificial respiration can give rise to sudden and dangerous emergencies such as pulmonary œdema, paralytic ileus, gastric dilatation, shock and disturbances of consciousness leading to coma. They suggest that, in addition to the usual clinical checks, the iron lung patient should have the hydrogen ion concentration of the blood systematically examined, also the concentration of bicarbonate, chlorine, sodium, potassium and total protein. They also recommend that special care should be taken in the "weaning period", when natural respiration supplants the artificial. The wonder is that so many iron lung patients continue to live; the self-regulating processes in the body must indeed be capable of adjustments greater than physiologists have conceived.

[1] *Deutsche med. Wchnschr.*, December 7, 1956.

ANTIBIOTICS AND VITAMINS.

UNLESS there is some obvious advantage to be gained, it is generally held not to be good practice to give mixtures of drugs. The Council on Pharmacy and Chemistry of the American Medical Association states that "the Council considers for evaluation drugs with a single active ingredient or extracts from a single source. Combinations or mixtures containing two or more active ingredients may receive consideration only if it is deemed desirable to present the Council's views for the information of the medical profession".

During the past few months a number of preparations have appeared containing mixtures of broad-spectrum antibiotics and vitamins, and a number of papers have been written extolling their virtues. C. S. Davidson in an editorial in the *American Journal of Clinical Nutrition*[2] draws attention to the paucity of evidence that the addition of vitamins to the antibiotics serves any useful purpose. Without giving any grounds for the claim, one author wrote: "It is the author's impression that the antibiotic vitamin combination represents a most valuable addition to the physician's armamentarium." He had no controls, not even giving the antibiotic alone to a series of patients. Another author had no controls, but stated: "It is well established that, with the stress of infection, there is need for increased vitamin intake." What vitamins? There is little evidence if any for this statement. Other authors are equally vague and inaccurate. Vitamins are not the only nutrients required by sick people, nor is the relation between antibiotics and vitamin metabolism known. Davidson comments: "Until it is an established fact that it is necessary to add vitamins to antibiotics and that the two in some way supplement each other, it seems both unnecessary and expensive for the patient to promote the use of these combined medications." If the physician thinks that the administration of any of the vitamins is advisable while he is giving an antibiotic, he can give the two separately in such doses as appear best to him.

[2] *Amer. J. Clin. Nut.*, November-December, 1956.

THE TREATMENT OF HEPATIC COMA.

THE relationship between chronic liver disease and neuro-psychiatric disturbances has been known since the time of Hippocrates. From the beginning of scientific medicine to the present day, a great deal more has become known. Yet it is only within recent years that treatment has become at all rational.

Some of the earliest scientific work in this field was that of Nikolai Vladimirovich Eck, whose construction of an anastomosis between portal vein and inferior *vena cava* made the proper study of the liver possible. Pavlov in 1883 described the phenomenon of meat intoxication in the Eck fistula dog. The dog, having eaten a large amount of protein, becomes stupified, ataxic and convulsed. If the amount of protein eaten is large enough, then the dog may pass into coma. Many years later it was noticed by R. Burchi[1] that some patients with cirrhosis of the liver had a raised blood ammonia content; some patients after taking ammonium salts not only had a raised blood ammonia content, but behaved like an Eck fistula dog. This was noted by van Caulaert and Deviller,[2] by H. Fuld[3] and by Monguió and Krause.[4] E. Kirk,[5] using a more accurate method of blood ammonia estimation (that of E. J. Conway[6]), investigated 28 patients with hepatic cirrhosis. After taking ammonium salts 23 of the patients developed a high blood ammonia content, but without any nervous sequelæ, save three who became drowsy. Patients with acute hepatitis and obstructive jaundice had a normal blood ammonia content.

In the post-war period many more observations have been made. Spontaneous hepatic coma in people with cirrhosis has become well known. The mental changes, inappropriateness, "flapping tremor" of extremities, electroencephalogram changes, and coma have all been well recorded. This syndrome has now been produced in cirrhotic patients by ammonium salts, urea, cationic resins and protein, according to G. B. Philips *et alii*.[7] With the advent of reliable transplenic portal venography (as described by M. Atkinson *et alii*[8]) it was realized that, broadly speaking, cirrhotic patients were divided into those with a portal systemic collateral circulation, and those without.

It is the patients with the collateral circulation who develop the neuro-psychiatric disturbances easily and who are precipitated into hepatic coma. Most hepatologists would agree that nitrogenous material in the bowel, which is acted upon there by bacterial enzymes, reaches the portal system as a group of toxic materials. The indicator of this, if not more, is ammonia. These materials by-pass the liver, which would otherwise metabolize them, and produce hepatic coma once they reach the peripheral venous system and eventually the brain. This portal systemic encephalopathy follows 10% or more of porto-

[1] *Folia clin., chim et micr.*, March, 1927.
[2] *Compt. rend. Soc. biol.*, October, 1932.
[3] *Klin. Wchnschr.*, September, 1933.
[4] *Klin. Wchnschr.*, August 11, 1934.
[5] *Acta med. scandinav.* (Supplement), 1936.
[6] *Biochem. J.*, December, 1935.
[7] *New England J. Med.*, August 14, 1952.
[8] *Quart. J. Med.*, January, 1955.

caval anastomoses. An interesting example of this, described by W. V. McDermott, junior, and R. D. Adams,[1] was anastomosis of the inferior mesenteric vein to the inferior *vena cava* in man. This was done during an operation of pancreatico-duodenectomy for carcinoma of the pancreas in a man who appeared to have a normal liver. McDermott and Adams claim this as the first Eck fistula in a man with a normal liver and no preexistent collateral circulation. This man had at least twelve episodes of hepatic coma precipitated by protein or ammonium salts.

Patients without this collateral circulation seldom show mere protein intoxication, and hepatic coma for them, as it does also for all cirrhotic patients terminally, means total liver failure and death. The patients with a collateral circulation are, of course, those who often develop œsophageal varices. When these bleed, the medical emergency which is created demands all the aids which we have to offer in cirrhosis of the liver. Blood in the gut, where it is decomposed by bacterial action, is a potent source of toxic nitrogenous material and rapidly precipitates hepatic coma, as McDermott *et alii* have shown.[2] Therefore all dietary protein should be stopped, and efforts made by means of enemata and daily purges to remove protein from the gut. A broad-spectrum antibiotic should be given to minimize the activity of bacteria in the gut. As bleeding from œsophageal varices may be exsanguinating and as the blood increases the risk of coma, bleeding must be stopped. For this purpose a Sengstaken tube, as described by R. W. Sengstaken and A. H. Blakemore,[3] is invaluable.

Glutamic acid is the latest and most controversial of our therapeutic agents. It has been discussed by I. D. Singh *et alii*,[4] by J. M. Walshe[5] and by W. V. McDermott *et alii*.[6] However, several people have reported on its action favourably, so it should be tried. Rapid recovery from coma has been reported to follow intravenous administration of glutamic acid to patients with collateral circulation. Walshe claims that it combines with ammonia to form glutamine and hence effects detoxication in the person in hepatic coma.

The measures described are proving themselves remarkably effective in the management of hepatic coma, and, together with teetotalism and protein restriction for cirrhotics, have brought some degree of rationalism to the treatment of liver disease.

ACHLORHYDRIA, PERNICIOUS ANÆMIA AND GASTRIC CANCER.

ACHLORHYDRIA is a well-known sign in gastric cancer and is invariably present in pernicious anæmia. It has been known for some time that achlorhydria often precedes the gastric cancer, sometimes by many years. Moreover, pernicious anæmia often terminates in gastric cancer. Many studies on these relations have been carried out by other workers in this field, but J. Berkson, M. W. Comfort and H. R. Butt,[8] of the Mayo Clinic, point out that fallacies can easily arise from the methods previously used by many workers. Their view are shared by N. Zamcheck, E. Grable, A. Lay and L. Norman,[7] who express the fear that "it is unlikely that the true frequency of gastric cancer in patients with pernicious anæmia can ever be determined". However, the Mayo Clinic workers have used an appropriate method of investigation. They chose 1058 patients, found to have achlorhydria at the Mayo Clinic in the years 1935 to 1938, and to be free of cancer at that time. Only patients between the ages of thirty and sixty years at the first examination were included. Of these patients, 21% had pernicious anæmia and were treated as a special group. A follow-up investigation was carried out some fifteen years later to determine the time and cause of death. Life table methods were used. A provisional or (as the statisticians say) null hypothesis was made that the mortality of these achlorhydrics should be approximately the same as the mortality of the general population. Then, the age composition of the clinic patients being known, expected numbers of deaths from gastric cancer and from all causes could be computed. Thus one death from gastric cancer could be expected in the group suffering from pernicious anæmia and some three or four in the group who did not suffer from pernicious anæmia. But eight deaths from gastric cancer occurred in the pernicious anæmia group and 18 in the other. Thus it is necessary to reject the provisional hypothesis and to accept the alternative—namely, that achlorhydrics suffer about six times as much gastric cancer as does the general population. Studies by J. Mosbech and A. Videbaek,[1] and by G. R. Hitchcock, W. A. Sullivan and O. H. Wangensteen,[2] using acceptable methods, have yielded similar results.

The Mayo Clinic takes great care in its follow-up studies, of which it may be justly proud. Such follow-up studies are conducted at a great disadvantage, for the clinic draws its patients from all over the whole of the United States; yet in this study 96·5% of over a thousand patients were traced after fifteen years, and the figures in a previous follow-up study of gastric cancer by J. Berkson, W. Walters, H. K. Gray and J. T. Priestley[3] were equally impressive. Geographical conditions are more favourable in the Australian States, where the population is concentrated in the capital cities; yet follow-up studies are rare. In Australian hospitals we find much energy expended on costing, but follow-up studies are regarded as rather utopian. In other words, hospital administration is concerned far more with how much treatment costs than with the more important question of whether the treatment does the patient good. This must result in a certain provincialism, for surgeons cannot assess the value of their treatment from their own experience and so must be dependent on opinions from "overseas".

ANÆSTHETIC FIRE AND EXPLOSION HAZARDS IN HOSPITALS.

FIRE AND EXPLOSION RISK is always present when inflammable anæsthetics are being used. A recent publication by the Standards Association of Australia, A.S. No. CZ.9—1956, entitled "Australian Standard Rules for the Minimizing of Anæsthetic Fire and Explosion Hazards in Hospitals" covers all aspects of this problem. The committee which is responsible for the booklet, and on which representatives of the British Medical Association and Australian Society of Anæsthetists sat, has dealt with construction of buildings, types of equipment, lists of explosive mixtures, theatre behaviour, and how to perform electrical tests. This is a valuable book which all hospitals should have, their personnel should read, and their management should follow.

Copies of AS No. CZ.9 are available from the Standards Association's Headquarters, Science House, Gloucester and Essex Streets, Sydney, and from branch offices in capital cities and at Newcastle. The price is 6s. per copy.

As a footnote to this explosion hazard it is as well that we should really consider the implications. An explosion may be defined as an outburst with a very violent shattering effect. By which time, in this particular context, it is too late for any remedy. As usual, too, the person most likely to suffer extremely is the one least culpable, and the one who has, into the bargain, blindly given his trust to others.

[1] *J. Clin. Investigation*, January, 1954.
[2] *Ann. Surg.*, September, 1956.
[3] *Ann. Surg.*, May, 1950.
[4] *Lancet*, May 15, 1954.
[5] *Lancet*, May 30, 1953.
[6] *Proc. Staff Meet. Mayo Clin.*, October 31, 1956.
[7] *New England J. Med.*, June 30, 1955.

[1] *Brit. M. J.*, August 12, 1950.
[2] *Gastroenterology*, October, 1955.
[3] *Proc. Staff Meet. Mayo Clin.*, April 9, 1952.

Abstracts from Medical Literature.

OBSTETRICS AND GYNÆCOLOGY.

Malignant Diseases associated with Pregnancy.

H. C. HESELTINE AND M. F. LOTH (*West. J. Surg.*, October, 1956) discuss the relationship of pregnancy to the diagnosis and management of various types of malignant disease; and they analyse 33 patients with malignancy of ten different types. These patients all had malignant disease recognized before pregnancy, during pregnancy, or while in labour. The series included 25 carcinomata and eight sarcomata. The carcinomata comprised 12 involving the cervix, six involving the breast, four involving the lower part of the bowel, two involving the face and one involving the thyroid gland. Of the patients classified as having sarcoma, four had Hodgkin's disease and two had lymphosarcomata. The average age of all patients in the series was 30·9 years, while patients with sarcomata averaged 24·4 years. Cases of carcinoma of the cervix (12) were diagnosed during pregnancy or the early puerperium. Of these, 10 were squamous carcinomata and two were adenocarcinomata. The authors plead for caution in diagnosis of cervical cancer associated with pregnancy because of changes in cell histology due to hormonal effects. These resemble changes which occur in *carcinoma in situ*. Of these 12 patients with carcinoma of the uterus six survived for five years after treatment, but at least three have died subsequently. It was noticed that the more advanced stages of carcinoma directly paralleled the advancing duration of the pregnancy. Of the six patients with breast cancer, only one lived five years, and she subsequently died from the disease. The authors state that it is generally agreed that mammary carcinoma has a worse prognosis when complicated by pregnancy, and that treatment should be the same as for the non-pregnant patient. Among the four patients with recto-colonic carcinoma related to pregnancy, three were treated prior to pregnancy and achieved a five-year cure. The one whose diagnosis was made in labour died within five months. Review of the four patients with Hodgkin's disease confirms previous observations that gestation did not adversely affect the course of this disease. Of this series one patient received nitrogen mustard during the course of pregnancy without injury to the fœtus. Pregnancy did not appear to affect the course of the other four sarcomatous patients, nor were the products of conception endangered by the malignancy. The authors conclude that pregnancy has not been shown to have any beneficial effect on any malignant neoplasm. Mammary cancer appears to develop more rapidly and spread earlier in the presence of pregnancy. Observations on carcinoma of the cervix in this series do not support the view that the neoplasm is stimulated by gestation. Any malignancy discovered during pregnancy demands prompt and appropriate treatment irrespective of the pregnancy, with the exception of radioactive isotopes in the treatment of carcinoma of the thyroid gland. The radioactive iodine may cross the placental barrier with damaging effects on fœtal thyroid tissue.

Cancer of the Cervix.

J. V. MEIGS (*Am. J. Obst. & Gynec.*, September, 1956) states that an attempt is now being made to substitute intelligence for dogmatism in the treatment of cancer of the cervix, both by irradiation and by surgical operation. He reviews 131 personal cases, in which treatment was by surgery only (61 cases), surgery following irradiation (29 irradiation failures and 20 irradiation cures), surgery followed by post-operative irradiation (10 cases) and surgery following pre-operative irradiation (10 cases). Of the 131 patients, 96 were living at the end of five years (73%). The irradiation as given to this group of surgical patients did not help statistically, but did cure three out of ten surgical "failures". Patients who had planned pre-operative irradiation had the smallest percentage of "positive" lymph nodes (16·3%); of these patients with "positive" lymph nodes 50% are living at the end of five years. Surgical operation appeared to improve the total results in this group, but the patients operated upon were the "best risk" patients, and irradiation may possibly have done the same thing. Surgical operation will cure those who fail to respond to irradiation in a fair percentage of cases, and irradiation will cure some of those who fail to respond to surgical operation. A study of the sensitization response (S.R.) and radiation reaction (R.R.) will help in the selection of patients for treatment. Fistula formation is too frequent, averaging from 8·4% to 15·0%, and pelvic irradiation had but little effect on its frequency in this series. The cure rate of patients with "positive" lymph nodes runs from 31% to 55% in the five-year results, and from 25% to 40% in the ten-year results. On the whole, the patients who have irradiation seem to do about as well as the others in this group who have no irradiation. The author concludes that irradiation and surgery are complementary, and in the hands of experts the results will be good whichever method is used. The importance of selection of cases is stressed.

Vesico-Vaginal Fistula.

H. S. EVERETT AND R. F. MATTINGLY (*Am. J. Obst. & Gynec.*, October, 1956) present data concerning the ætiology, methods of treatment and results in 149 cases of vesico-vaginal fistula encountered at the Johns Hopkins Hospital during the twenty-three years 1933 to 1955. Analyses of the results show that 65 of the fistulæ resulted from gynæcological operations, 28 followed obstetrical difficulties, 48 were associated with carcinoma of the cervix and/or irradiation therapy, and eight had miscellaneous causes. No attempt was made to close a fistula in less than six months from its inception or in less than six months after an unsuccessful attempt. Total hysterectomy was by far the most important cause of the post-operative fistulæ (46 cases), and this was followed by the operation of vaginal removal of the cervical stump (seven cases). The authors consider that vesico-vaginal fistulæ after hysterectomy probably result from inclusion of a portion of the bladder wall within a suture rather than from an unrecognized laceration of the bladder. Of the 65 post-operative fistulæ, 46 were successfully closed by the Latzko partial colpocleisis technique, which was successful on the first attempt on all but two patients. Of the others, 18 were repaired by other vaginal methods with only three failures. Twenty-eight obstetrical fistulæ were treated by the Latzko method in one case (after Cæsarean section), by a modified Sims's technique in 25, and by a transabdominal approach in one case. These final attempts were successful in all but one case. Fistulæ resulting from carcinoma of the cervix and/or irradiation for this disease (48 cases) constitute the most challenging and discouraging group of all the fistulæ in the series. Treatment was attempted in 21 cases and was successful in 16 and a failure in five cases. The authors consider that hysterectomy subsequent to irradiation therapy for growth is likely to result in a vesico-vaginal fistula and also ureteral injury. Of the eight miscellaneous fistulæ, four followed intravesical instrumentation, two having complicated the use of a resectoscope for persistent bladder infection in children. There were three cases of spontaneous vesico-vaginal fistula in the series, and one of these healed spontaneously. As regards suture material, the authors do not use silver wire sutures when performing the Latzko operation but favour it for fistulæ lower in the vagina, especially if the urine is infected.

Placenta Prævia.

A. M. REICH (*Am. J. Obst. & Gynec.*, August, 1956) reports a critical appraisal based on a thirty-five year study (1919 to 1954) of 310 cases of *placenta prævia* at Bellevue Hospital. Observations on the earlier series of these cases—1919 to 1941—are contrasted with the more recent series of the years 1941 to 1954, in an attempt to answer questions concerning the prevention of maternal, fœtal and neonatal mortality. The incidence of *placenta prævia* at this hospital was 0·44%, or one in 225 cases. It occurred nine times as frequently in multiparous women as in *primigravidæ*, and the higher the gravidity the greater was the incidence of *placenta prævia*. Abnormal presentations, chiefly breech presentation and transverse lies, were noted in over 25% of the series, and an unusually high station of the presenting part was a feature. Nearly 82% of the births in the early series were accomplished through the vaginal route, while only 16% were by Cæsarean section. In the recent series 85% of patients were delivered by section and 15% by vaginal operative procedures. During the earlier series of patients 36% were transfused, while during the more recent series 85% were transfused. A table on puerperal morbidity demonstrates the vulnerability of the patient with *placenta prævia* to puerperal infection. The author recommends avoidance of vaginal and rectal examinations, maintenance

of the normal cell volume, extended use of Cæsarean section and prophylactic use of antibiotics in the prevention of puerperal morbidity. The maternal mortality rate in the early series was 11%, and 55% of infants were lost. A reduction of 50% in the fœtal mortality has been achieved in the later series of cases, and maternal mortality has been reduced to 1·75%. The modern plan of treatment which has resulted in greatly improved results is based on: (i) accurate diagnosis aided by suitable X-ray studies; (ii) enforced hospital observation and treatment; (iii) the avoidance of all traumatic factors such as vaginal or rectal examinations, induction of labour or pelvic operative procedures; (iv) the replacement and maintenance of blood volume; (v) delivery by Cæsarean section, preferably after the thirty-sixth week. Arrangements for immediate efficient care of the premature infant should be instituted before delivery.

Hydatidiform Mole.

P. E. STROUP (*Am. J. Obst. & Gynec.*, August, 1956) reports a study of 38 cases of hydatidiform mole at the Pennsylvania Hospital during the twenty-two-year period 1933 to 1955. The incidence of mole at this hospital was one in 1488 pregnancies, and 71% of the patients affected were *multiparæ*. Factors such as race, economic state, high parity and age group were not significant in the series. Bleeding between the third and fifth months of pregnancy was the outstanding sign. In 51% of the cases, bleeding commenced during the first or second months of pregnancy; the duration of hæmorrhage was less than two months in 76% of cases. Pain was the outstanding symptom and had about the same significance as in cases of threatened or inevitable abortion. Nausea and vomiting occurred in 58% of mole patients; the incidence compares closely with that in normal pregnancies. Occasionally the clinical features of pre-eclamptic toxæmia are seen in patients with hydatidiform mole. An enlarged uterus is a frequent finding in molar pregnancies, but in 18% of this series the uterus was smaller than expected or of the size expected for the period of gestation. Cystic ovaries were noted in 16% of the patients. The author stresses the importance of bearing in mind the possibility of mole when making a diagnosis. Aids in diagnosis include a flat film X-ray examination of the abdomen, which may show a large soft tissue mass instead of fœtal parts. Biological tests of pregnancy are of limited value and titres in multiple pregnancy may be similar to those in mole cases. The difficulty in diagnosis of hydatidiform mole is shown by the observation that a correct diagnosis on admission was made in only 16% of the series, if patients are excluded who passed mole tissue before or on admission. The most satisfactory form of treatment was thorough dilatation and curettage following spontaneous abortion of the mole (17 cases). Abdominal hysterotomy was performed on four patients, when curettage had failed or the uterus was larger than a twelve weeks' gestation. Hysterectomy was reserved for three patients who were parous and were over thirty-five years of age with a large mole. Of the 38 cases of hydatidiform mole, two were the malignant or invasive variety, but there were no cases of chorion-epithelioma. The follow-up on patients varied from three months to over three years, and all patients were alive and well when last seen. The author discusses the significance of a rising titre in quantitative biological assays, and the histological features of the tissue from the mole in relation to prognosis of chorio-carcinoma development. He concludes that it is difficult to predict whether any particular mole will pursue a benign or malignant course, and clinical observations concerning the recurrence of bleeding and size of the uterus are important in this respect.

Vaginal Delivery following Cæsarean Section.

P. E. LAWLER, SENIOR, M. J. BULFIN, F. C. LAWLER AND P. E. LAWLER, JUNIOR (*Am. J. Obst. & Gynec.*, August, 1956) report a study of 104 cases of vaginal delivery following Cæsarean section and 157 cases of repeat Cæsarean section. They consider that the dictum "Once a section, always a section" is still favoured in the majority of American teaching hospitals. A table of vaginal deliveries following Cæsarean section from various large hospitals gives an incidence ranging from 16% to 38%. The authors believe that any woman who has had a previous Cæsarean section should be prepared to undergo another if necessary, but that she should be allowed to demonstrate her capacity to be delivered vaginally provided the necessary conditions are fulfilled. An analysis of 165 patients delivered after previous section showed 66% delivered by further section and 34% delivered vaginally. The chief indications for the original section in patients delivered vaginally were: toxæmia, *placenta prævia*, *abruptio placentæ* and cephalo-pelvic disproportion. The authors point out that the listed indication of disproportion is at times really not disproportion but uterine inertia and failure of the cervix to dilate. There was no case of uterine rupture among the 104 vaginal deliveries after section. There were three infant deaths in the series (2·9% mortality), prolapse of the cord accounting for two of the deaths. There were four patients (2·5%) with incomplete rupture of the uterus discovered in 157 elective repeated sections. Of these two required Cæsarean hysterectomy and the uterus was successfully repaired in the other two. There was one patient in the series who was found to have a well-healed scar after six sections. The authors consider that the practice of sterilizing a woman after two or three Cæsarean sections is "medically archaic". Although maternal fatalities and fœtal loss are at a low rate following section, it does not follow that the procedure is without hazard. The authors list 11 criteria which should be considered in the selection of patients for vaginal delivery after previous section. The two hazards of Cæsarean section are mentioned—the immediate hazard of operation and the late hazard of rupture of the uterus in a subsequent pregnancy. This late hazard cannot be forestalled altogether by repeat section because there are some 24% of uterine ruptures before the thirty-seventh week or time of scheduled repeated section. The authors conclude that with due care in selection of cases vaginal delivery following previous Cæsarean section can be a safe and most rewarding experience for the mother.

SURGERY.

Urinary Diversion with Voluntary Control.

T. H. JOHNSON (*J. Am. Geriatrics Soc.*, August, 1956) describes a new operation for malignant disease of the bladder which obviates the common complications of transplantation of the ureters into the rectum, such as chronic pyelonephritis from fæcal contamination of the urinary tract and hypochloræmia with acidosis from the reabsorption of urinary constituents by the gut. The new operation provides for continence and for voluntary control of both streams in the following manner. The rectal ampulla is isolated, and the ureters are transplanted into it, so that the ampulla becomes a closed sterile container or new bladder with urination under the control of the external sphincter and the intrinsic muscles of the anus. Next the proximal part of the sigmoid colon is mobilized and drawn through an opening made in the perineum immediately in front of the anus. The external sphincter of the anus now encircles both a new bladder and a new rectum (the perineal stoma of the sigmoid). Total cystectomy or whatever operation is necessary for the growth can be undertaken next or reserved for a second stage. The patient is not left with an abnormal orifice in an unnatural site and is spared the depressing complications of leaky skin cups, cutaneous excoriation and clumsy leg bags.

The Severely Crushed Chest.

E. E. AVERY *et alii* (*J. Thoracic Surg.*, September, 1956) describe a new method of treating patients who have suffered severe crushing injuries of the chest. Continuous hyperventilation of the lungs is effected by a piston-type respirator, which delivers filtered and humidified air under gentle positive pressure through a tracheostomy. Apnœa results, so that there is no longer any tendency to paradoxical motion of the chest wall. Hypoxia and hypercapnia are corrected, so that there is no tendency to pulmonary and cerebral œdema. Less sedation is required. Patchy deflation and inflammation of the lungs are less prone to occur. The method has permitted the survival of patients with seemingly fatal injuries, including one man who was "rolled like pie dough" into an eight-inch space between a locomotive and a steel furnace and sustained multiple bilateral fractures of all his rubs, costochondral separations, fractures of the sternum, clavicles and pelvis, bilateral tension pneumothoraces, crushing injuries of the liver and genito-urinary tract, acute dilatation of the stomach and paralytic ileus. He later returned to work. The authors suggest that the method may have value in the treatment of respiratory depression in poliomyelitis, tetanus, brain injury, drug overdose and various other morbid conditions.

Special Articles.

REPORT ON WORLD HEALTH ORGANIZATION FELLOWSHIP IN TUBERCULOSIS CONTROL.[1]

THE study tour on which this report is based was made from December, 1954, to October, 1955, in the United Kingdom, the continent of Europe, Canada and the United States of America.

It is not suggested that any particular control or therapeutic measure used with success in one country can necessarily be successfully applied to another, but nevertheless the knowledge gained by widespread observation and contact with many authorities helps one to gain a general picture of tuberculosis as a world problem.

Australia along with many other countries has been experiencing a marked decline in tuberculosis mortality. This decline started many years ago and has rapidly accelerated since 1947, when the results of the widespread use of really effective antibacterial drugs were first apparent. Morbidity, on the other hand, has shown a much slower decline.

Case Finding.

It is generally agreed that an adequate case-finding programme is one of the solid rocks on which an effective tuberculosis control scheme is built, and that close screening of the contacts of known tuberculous subjects is one of the most fruitful sources in the detection of new cases. Here, however, agreement ceases: on one extreme one saw the vast project in Norway, where the total population is compulsorily undergoing X-ray examination at regular, if somewhat prolonged, intervals, and B.C.G. vaccination of all tuberculin-negative persons is carried out; at the other extreme were voluntary mass X-ray surveys with no kind of selection, the same small percentage of enthusiastic supporters in many cases undergoing X-ray examination every year, and no attempt being made to find fresh fields.

In between there were such schemes as compulsory X-ray examination of all persons arrested by police and of gaol inmates, as seen in many of the United States (this is proving a fruitful source of new cases), compulsory X-ray examination of certain groups of the community such as food-handlers, those in duty occupations and hospital employees, factory and other non-hazardous industrial surveys, surveys of youths entering military forces *et cetera*.

In certain areas in the United States, particularly where infection rates are low and B.C.G. vaccination has not been used, tuberculin surveys are proving much less costly than X-ray surveys, only those reacting to tuberculin undergoing X-ray examination.

The place of the mass X-ray survey in detecting other chest anomalies such as lung cancer and heart disease, both of which are increasing, should not be forgotten.

Diagnostic Procedures.

Once a suspected case of tuberculosis has been found in any survey, it is most important that a correct diagnosis is made before the patient is labelled tuberculous with all that goes with such a label, including, it is regretted to say, the stigma still attached to the disease, the prospect of drug treatment for a year or more, with part at least of that time spent away from family, and, in the case of a bread-winner, loss of family income for a substantial time. Bacteriological confirmation is the one most commonly sought and should be the aim in all cases. In a small percentage of cases direct confirmation of diagnosis is never achieved, but clinical evidence including response to specific therapy is almost confirmatory.

B.C.G. Vaccination.

Although it is now twenty years since B.C.G. vaccination was first introduced, there are still many who actively oppose its use. While it cannot be said that the vaccination is completely harmless, the fatalities associated with its use have been exceptionally few and the morbidity is very low. Where it has been widely used, there has been a dramatic fall in the tuberculosis mortality and some fall in morbidity, but a similar fall has occurred in other parts of the world where the vaccine has never been used, and the value of widespread vaccination in the communities where tuberculosis is already on the decline is very doubtful. The continued improvement of living standards together with vigorous case-finding and treatment campaigns has led to such a state of affairs in some American centres that the tuberculin-positive rate in adults is around 15% or lower; authorities such as Myers in Minneapolis and many others are rightly asking: "Why should we infect our young people with a bacillus that they will probably never otherwise meet in their lives?"

When one comes to the communities with a lower living standard, there is a strong feeling that B.C.G. vaccination will help considerably in the final eradication of tuberculosis, and for these peoples the use of the vaccine is fully justified. The widest use of B.C.G. was seen in Norway and Sweden; in the former the whole population is being tuberculin tested with, at the same time, a miniature film chest X-ray examination, and all negative tuberculin-reactors are vaccinated.

In Sweden there is compulsory vaccination for newborn babies, and it is also available for selected groups such as students, young servicemen and children leaving school who missed vaccination as infants or who have regained a negative response to the tuberculin test.

In Great Britain the general plan is to vaccinate contacts of known tuberculous subjects, students and nurses, young service trainees and children leaving school; there is no compulsion, and a scheme of this kind seems to be the most rational when it is considered that some protection is needed, but that total vaccination of the population is undesirable. Most Australian States have a B.C.G. programme similar to the British one.

Treatment.

Treatment will be considered from the aspects of home treatment, antibacterial treatment, bed rest and surgical treatment, both minor and major.

Home Treatment.

There is no doubt that the infectious tuberculous subject is best removed from home; but there is a growing realization that, with cooperative patients who have satisfactory homes, a considerable part of the treatment time, which used to be spent in sanatorium, can be passed at home with antibacterial treatment. Most agree that it is preferable for the patient to be admitted to hospital as early as possible after diagnosis of the disease, for institution of drug treatment and for general orientation and education, but that after a relatively short time, particularly if he is non-infectious, the patient can be returned home, recalled to the hospital for regular review and readmitted for any special treatment such as surgical intervention.

Antibacterial Treatment.

There was probably no more controversial subject encountered during the whole period of the Fellowship than the use of antibacterial drugs. However, except for primary tuberculosis in children which will be discussed later, most authorities agree that some form of antibacterial treatment is indicated for all forms of tuberculosis for at least a short time. The majority agree also that at least two of the well-proven drugs should be administered together; there is, however, some feeling in favour of the use of isoniazid alone in certain cases in which sputum findings are negative, and as a single, long-term "holding drug", after treatment with the more recognized regimes.

The three most commonly used drugs are streptomycin, PAS and isoniazid. Usually a combination of any two is administered, but there is a growing feeling, particularly in the parts of Canada visited and in some parts of the United States, in favour of a triple-drug regime employing all three drugs.

Other drugs with antituberculosis activity, such as viomycin, thiosemicarbazone and "Terramycin", are used in varying amounts in a number of centres, but in most cases are employed only when bacilli are resistant to one or all of the usual three drugs.

New drugs under investigation are pyrazinamide and cycloserine; neither of these seems to have any great advantage over the older drugs, and they have the disadvantage of much greater toxicity.

When one comes to consider the size of dose, number of daily or weekly administrations and total length of anti-

[1] This report is published with the permission of the World Health Organization. The opinions expressed are those of the author and do not necessarily represent those of the World Health Organization or of the Victorian State Department of Health.

bacterial treatment, here even more controversy was encountered. In the United Kingdom and Europe generally there were many more people in favour of six to twelve week courses of drugs with periods of intermission and total administration for six to nine months. However, a number of authorities in the old world now feel that continuous administration of drugs for one to two years is probably more effective, and in this way they are following a fashion set in the United States and Canada, where in many places the problem is now "when do we stop antibacterial therapy?".

Apart from the routine administration of antituberculosis agents considered above, there is, in various parts of the world, a feeling that the action of these drugs could perhaps be enhanced by the concomitant administration of some other substances such as ACTH, cortisone or tuberculin—substances which, when they are administered without antibacterial drugs, exert usually a deleterious effect on the tuberculous process, but which, when their administration is covered by these drugs, may "soften" up the lesion in such a way that the drugs can act more effectively.

Bed Rest.

Before the days of effective antibacterial drugs all workers agreed that bed rest helped healing of tuberculous lesions and that physical activity was usually deleterious. Some workers now feel that physical activity combined with the use of antibacterial drugs may be more effective than bed rest and drugs, activity keeping the bacilli under conditions of active growth and division so that the drugs can act more effectively.

Reversible Collapse Therapy.

In some parts of the world, particularly in the eastern and mid-west States of America and in scattered centres in Europe, there has been a strong swing away from reversible collapse therapy, the opinion being that antibacterial treatment does all and more than collapse, and that the complications inevitable with pneumothorax have thus been avoided. Others just as dogmatically state that with drug treatment pneumothorax and pneumoperitoneum are more effective than in the pre-drug era and are more effective than drugs alone.

Irreversible Collapse Therapy.

Extrapleural Pneumothorax.—Extrapleural pneumothorax is included in the irreversible measures because it is rarely completely reversible. This measure is still widely used in many European centres and, it is claimed, with good results; others have abandoned it completely because of the high rate of complication.

Thoracoplasty.—One found in quite a number of places individual surgeons who had abandoned thoracoplasty in favour of resection and in a few places the reverse, thoracoplasty being performed when resection would be equally good if not better. There is no doubt that quite a lot of patients would do equally well with thoracoplasty or resection, and there is also no doubt that for some patients resection would be disastrous and thoracoplasty life-saving.

Monaldi Drainage.

Closed intracavitary drainage was introduced by Monaldi about fifteen years ago and is still widely used by him. It was interesting to find that the draining catheter is now used less for drainage, although some intermittent suction is applied, but more as a route for introducing antibacterial substances into the cavity.

Cavernostomy.

Cavernostomy is a strictly salvage operation, and it was noted that in some centres surgeons seemed to have forgotten its value; a number of patients were seen who could have been helped by this measure.

Resection.

The increase in the use of resection for pulmonary tuberculosis has been one of the outstanding advances of the last few years and has been made possible partly by the advances in drug treatment.

There is now almost universal acceptance of pulmonary resection, but indications vary somewhat from centre to centre, and also the basic philosophy of whether resection is the prime form of treatment and drugs augment it, or whether drugs and rest form the basis of treatment and resection is used when these fail. The latter view is much more widely held, but nevertheless there are still clear-cut indications for early resection in such conditions as the "coin" lesion of indeterminate ætiology, and when irreversible gross bronchial lesions exist. There is also probably some justification for early resection when localized necrotic lesions are of such an extent that the changes are obviously irreversible. The greatest controversy about resection is in the attitude to the caseous necrotic residues left after routine drug and hospital treatment.

Persistent cavitation is considered by most to be a fairly clear indication for resection, although it is recognized that here it carries a higher mortality than for removal of residues.

Primary Tuberculosis in Children.

The subject of primary tuberculosis in children was studied in some detail during the period of the Fellowship, and certain points seem to stand out clearly. It is now considered by most that the child with primary tuberculosis, provided he is not febrile and obviously ill, is best kept at home.

There is considerable difference of opinion about the value of antibacterial treatment for simple primary tuberculosis. A large number of authorities consider that the disease is essentially benign, but many point out that a small proportion of children develop hæmatogenous dissemination, such as meningitis or bone and joint lesions, and think that if they are treated with drugs this may be prevented.

Isoniazid seems to be the best drug to use in cases of primary tuberculosis. The Bellevue Hospital group in New York state that they have not seen a case of hæmatogenous dissemination occur in a group of about 1000 children treated with this drug.

Pleural Effusion.

There is a growing realization of the importance of treating pleural effusion seriously, and most people now consider that such an effusion should be treated with full rest and antibacterial regime. Some centres favour aspiration of all the fluid and the instillation of drugs into the pleural cavity; others aspirate only for diagnosis and rely on oral and parenteral administration of drugs.

Extrapulmonary Tuberculosis.

It is now generally accepted that antibacterial treatment, if administered over long periods, does definitely help in the presence of most extrapulmonary lesions, but that the effects are not as rapid or dramatic as with pulmonary tuberculosis. Most authorities are now using less rigid immobilization of involved joints, and allow most movements apart from full weight-bearing.

In the management of genito-urinary tuberculosis, drug treatment has led to healing of small lesions and has made segmental kidney resection possible. There is also a more conservative attitude towards tuberculous epididymitis.

In the management of tuberculous meningitis there is still considerable difference of opinion about the need for intrathecal medication. An increasing number of authorities are now relying on oral administration of isoniazid and perform lumbar puncture only for diagnosis and to assess progress.

Social Services.

It is universally recognized that the general decline of tuberculosis is in part at least due to improved social conditions, but any scheme of tuberculosis control is bound to fail if the social welfare of the sufferers and their dependants is not catered for.

Various schemes for support were encountered, some financial, some in goods. However, there was no scheme that was as satisfactory as our own Australian "tuberculosis allowance".

Tuberculosis Associations.

In practically all countries visited voluntary tuberculosis associations play a greater or lesser part in the general plan of tuberculosis control. The usual arrangement is that the voluntary body supplies funds and in some places facilities for research and for teaching, but does not play any active part in treatment.

Conclusion.

Victoria is well to the forefront in the fight against tuberculosis. As in most other fields of medicine, the facilities for research and fundamental study leave much to be desired.

PETER R. BULL, M.D., B.S., M.R.A.C.P.
Victorian Department of Health (Tuberculosis Branch) and Austin Hospital,
Heidelberg,
Victoria.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

INFORMATION TO HIS EXCELLENCY MR. BLIGH: GOVERNOR KING TO GOVERNOR BLIGH.[1]

[Copy of a manuscript held in the Chief Secretary's Office.]

1807.

YOU will find the natives of this, as of all other similar Countries very capricious and impossible to be fixed to any situation or pursuit. No securing or other means could induce them to attempt cultivation although they do not fail to profit of the white man's labours with great avidity and hitherto with much treachery.

Some few make themselves useful by rowing boats, going in Colonial vessels, and attaching themselves to sealing gangs, in which they have been much encouraged. They have yearly plundered the isolated settler of his all, and attacked the ripening corn of all descriptions, which has occasioned some violent acts on both sides, and I believe that were there a possibility of investigating how these quarrels arose, that much blame would attach to the White Man in the first instance, not so much wickedness as from fear and mistrust, and the Native once roused loses no opportunity present or distant of avenging himself. Their barbarities has in many instances been very great and apparently unprovoked, but I can never think this has always been the case. For the last two years they have been generally inoffensive owing to the great effect that my sending two of their members to Norfolk Island in 1804 had on them—since when no disturbance has occurred and no theft been committed.

Most of them keep about Broken and Botany Bay making frequent visits in the summer to fight their battles which are often sanguinary and cruel to each other—It would seem almost necessary on human principles to check these acts but being an interference with their customs and prejudices none has been offered.

Much has been said about the propriety of their being Compelled to work as Slaves, but as I have ever considered them the real proprietors of the Soil I have never Suffered any restraint whatever on these lines, or Suffered any injury to be done to their persons or property. And I should apprehend the best mode of punishment that could be inflicted on them, would be expatriating them to some of the other settlements where they might be made to labour as in the case of the two sent to Norfolk in 1804.

PHILIP GIDLEY KING.

Correspondence.

ALCOHOLICS ANONYMOUS.

SIR: Briefly and bluntly, Alcoholics Anonymous most sincerely seeks the support and attendance of as many doctors as possible at a public meeting at the Sydney Town Hall on Wednesday, March 27, 1957. This extraordinary movement now has 101 groups in New South Wales. In Sydney and suburbs 53 groups meet every week. Some seven to eight meetings in different places each and every night have growing attendances, and there are six groups in the Newcastle area. In the country no less than 42 meetings a week are held all over New South Wales. Alcoholics Anonymous has always desired the help of the medical profession, as we believe that we have a message for all doctors in every country—anywhere. It seems that it is nowhere now denied that alcoholism is a disease. Through the actual people whose lives have been changed so remarkably we invite all medical men, their families and friends to hear about Alcoholics Anonymous—what it is, how it works, and how to help the alcoholic man or woman.

We would be grateful, sir, if you would publish this letter as an invitation to your readers, whose attendance would be readily appreciated. Tickets are available at the Alcoholics Anonymous Central Office at 63 Elizabeth Street, Sydney (BW 7745).

I am, sir, on behalf of the Committee of Alcoholics Anonymous Public Meeting,

Yours, etc.,

COLIN R———.

Sydney,
February 18, 1957.

[1] From the original in the Mitchell Library, Sydney.

Australasian Medical Publishing Company Limited.

OPENING OF WESTERN EXTENSION OF THE PRINTING HOUSE.

THE newly constructed western extension of The Printing House of the Australasian Medical Publishing Company Limited was opened on Friday, February 22, 1957, by Sir Henry Newland, Chairman of Directors of the Company. This marked an important forward step in the development of the Company, and the Directors had invited a number of distinguished members of the medical profession, as well as others who had been associated with The Printing House, to share the pleasure of the occasion. These included Dr. Donald Cameron, Federal Minister for Health, Dr. A. J. Metcalfe, Commonwealth Director-General of Health, Sir Charles Blackburn, Chancellor of the University of Sydney, Dr. H. C. Colville, President of the Federal Council of the British Medical Association in Australia, Sir Herbert Schlink, President of the Australian Hospital Association, and Dr. H. G. Wallace, Director-General of Public Health for New South Wales.

Some sixty guests, in addition to the Directors and Executive Officers of the Australasian Medical Publishing Company Limited, sat down to lunch, which was served in the basement of the new extension. After this the opening ceremony was performed on the ground floor in the presence of the guests and the staff of the Company. Dr. W. L. Calov, Vice-Chairman of Directors, before calling on Sir Henry Newland to open the extension, outlined briefly the constitution and work of the Company and told something of the story of the building of the new extension. His remarks were supported by Dr. J. P. Major, Victorian Director of the Company. Sir Henry Newland then cut the ribbon across the entrance to the ground floor and declared the western extension open. Later afternoon tea was served to guests and staff.

The new extension provides a great increase in floor space for the housing of modern machinery on order in the printing section and for the composing room, a basement for storage, especially of paper, and on the top floor a new board room, to be known as the T. W. Lipscomb Room, and modern amenities for the staff.

Congress Notes.

AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

THE Executive Committee of the Australasian Medical Congress (British Medical Association), Tenth Session, to be held at Hobart from March 1 to 7, 1958, has forwarded the following notes for publication.

The Tasmanian Branch of the British Medical Association has accepted the Federal Council's invitation to hold the Tenth Session of Congress in Hobart in 1958. Dr. J. B. G. Muir is President of Congress. Organization has now reached a stage where basic planning is complete, and the following details are published for information.

Accommodation.

March is the tourist season in Tasmania, so that, although the main hotels have been reserved in Hobart, accommodation may be slightly limited. The standard of accommodation falls after the first three to four hundred reservations. Apart from the usual reservations for interstate Congress officials, priority for allotment of accommodation will be in the order in which applications are received. The form for hotel reservation is attached to the form of application for membership. Accommodation for the periods before

or after Congress week can be arranged if application is made early, but in the late pre-Congress stage it may become incumbent upon the member himself to arrange accommodation outside Congress week.

Application for Membership of Congress.

Application forms for membership of Congress may be obtained on request from the Local State Secretary (see below). It is particularly asked that all details of all sections of these forms be completed. The fee for joining Congress is £5 5s. *plus* exchange, and should accompany the form when it is returned to the Local State Secretary, who will forward it to Congress Office in Hobart. Applications should not be sent direct to Hobart.

Local State Secretaries are as follows: *New South Wales*: Dr. M. S. Alexander, O.B.E., c.o. British Medical Association (New South Wales Branch), 135 Macquarie Street, Sydney, N.S.W. *New Zealand*: North Island, Dr. Warwick Macky, 94 Remuera Road, Auckland, New Zealand; South Island, Dr. C. Gresson, 24 Weka Street, Fendalton, Christchurch, New Zealand. *Queensland*: Dr. W. D. Friend, 88 L'Estrange Terrace, Kelvin Grove, Brisbane, W.1, Queensland. *South Australia*: Dr. Robert Hecker, 163 North Terrace, Adelaide, South Australia. *Tasmania*: Dr. L. W. Knight, 169 Macquarie Street, Hobart, Tasmania. *Victoria*: Dr. C. H. Dickson, Medical Society Hall, 426 Albert Street, East Melbourne, Victoria. *Western Australia*: Dr. J. R. H. Watson, 246 St. George's Terrace, Perth, Western Australia.

Scientific Programme.

The sixteen sections in the scientific programme are listed below, together with the name of the Secretary of each Section: *Section of Anæsthesia*: Dr. J. Woodley, Launceston General Hospital, Launceston. *Section of Dermatology*: Dr. D. M. L. Finlay, 190 Macquarie Street, Hobart. *Section of History of Medicine*: Dr. R. J. Connolly, 176 Macquarie Street, Hobart. *Section of Medicine and Experimental Medicine*: Dr. G. A. Robbie, 69 Davey Street, Hobart. *Section of Naval, Military and Air Force Medicine and Surgery*: Dr. L. H. Jones, 9 Hopkins Street, Moonah, Tasmania. *Section of Neurology, Neurosurgery and Psychiatry*: Dr. J. R. V. Foxton, Division of Mental Health, 20 Murray Street, Hobart. *Section of Obstetrics and Gynæcology*: Dr. W. W. Wilson, 174 Macquarie Street, Hobart. *Section of Ophthalmology*: Dr. J. Rogers, 178 Macquarie Street, Hobart. *Section of Orthopædics*: Dr. A. McL. Millar, 71 Davey Street, Hobart. *Section of Oto-Rhino-Laryngology*: Dr. J. H. Sherrey, 119 Macquarie Street, Hobart. *Section of Pædiatrics*: Dr. N. M. Newman, 71 Davey Street, Hobart. *Section of Pathology, Bacteriology, Biochemistry and Forensic Medicine*: Dr. A. McS. McArthur, Commonwealth Health Department, Hobart. *Section of Public Health, Industrial Medicine and Hospital Administration*: Dr. J. Edis, Department of Public Health, Davey Street, Hobart. *Section of Radiology and Radiotherapy*: Dr. H. Holden, 24 Venlahe Avenue, Trevallyn, Launceston. *Section of Rehabilitation and Physical Medicine*: Dr. Paul Clarke, 268 Sandy Bay Road, Hobart. *Section of Surgery*: Dr. W. E. B. Boscence, 55 Mortimer Avenue, Hobart.

The subjects chosen by the Executive Committee for the Plenary Sessions are: (*a*) thyroid diseases; (*b*) heart failure; (*c*) fluids and electrolytes in health and disease.

So far the scientific programme is still in the early stages as regards subject and lecturers for each section. Further details will be announced later. The lectures will be held at the University of Tasmania and at the Theatre Royal.

Social Programme.

Intending visitors to the Congress can look forward to a very pleasant social programme, which will include excursions, private entertainment, sports *et cetera*. Provision is being made for the entertainment of any young people coming with their parents. Sponsoring of visitors will be carried out to the best of the ability of the limited number of practitioners in Tasmania.

General Programme.

The Registration Office will open on Saturday, March 1. Monday, March 3, is the official opening day, with the inaugural meeting in the evening. The scientific sessions will commence on Tuesday morning, and end on the afternoon of Friday, March 7. There will be a Congress ball on the Friday night.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED FEBRUARY 23, 1957.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	3(3)	1(1)	..	1	1(1)	..	..	..	6
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	20	..	..	..	..	..	20
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	1	..	..	..	1(1)	..	..	..	2
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	..	18(14)	3(2)	..	..	..	..	3	24
Diphtheria	2(2)	..	..	..	2(1)	..	2	..	6
Dysentery (Bacillary)	..	2(2)	4(4)	5(4)	..	..	1	..	12
Encephalitis	..	2(1)	..	..	..	..	..	..	2
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	1(1)	..	..	..	1	..	..	2
Infective Hepatitis	57(39)	55(18)	..	5(3)	5(2)	3	2	..	127
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	6	..	..	..	..	..	6
Malaria	..	..	2(1)	..	..	..	..	..	2
Meningococcal Infection	..	3(3)	..	..	..	..	..	..	3
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	1(1)	..	..	..	..	..	..	..	1
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	3(2)	..	2(1)	..	..	..	..	..	5
Puerperal Fever	..	..	1	1(1)	..	..	..	..	2
Rubella	..	26(17)	..	14(4)	2(2)	..	..	..	42
Salmonella Infection	..	..	..	2(1)	3(2)	..	..	..	5
Scarlet Fever	7(4)	5(1)	1	..	1(1)	..	..	..	14
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	1(1)	..	..	..	..	..	1
Trachoma	..	..	..	..	2	..	1	..	3
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	38(19)	14(10)	22(12)	4(2)	6(3)	3	1	..	88
Typhoid Fever	..	..	..	..	1(1)	..	..	..	1
Typhus (Flea-, Mite- and Tick-borne)	..	..	2(1)	..	..	..	..	..	2
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

Transport to Hobart.

Air transport is easiest. Australian National Airways have agreed to run as many special planes as required and will give members priority connecting through bookings to Hobart. For those wishing to hire cars, there are any number available at either Launceston or Hobart, and requests for such are part of the detail on the application for membership forms. Unless one is fortunate enough to get passage on an Orient or P. and O. ship from Sydney to Hobart, the only other means of sea travel is by the overnight Bass Strait ferry from Melbourne to Launceston or Burnie. Private cars may be brought this way. A train brings passengers from these northern ports to Hobart—a five-hour journey of about 120 miles. The drive from the north to Hobart is interesting, and the road is good.

General.

March is a very pleasant month in Tasmania, which is an island renowned for its scenic attractions. It is suggested that visitors give consideration to having a holiday in Tasmania as well as attending Congress week in Hobart.

Address of Congress Office.

The address of Congress Office, Hobart, for correspondence is Box 812H, G.P.O., Hobart.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes *et cetera* appeared in the *Commonwealth of Australia Gazette*, No. 7, of January 31, 1957.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth.

Resignation.—The resignation of Roger George Congdon of his appointment as Surgeon Lieutenant (for Short Service) (on probation) is accepted, dated 24th December, 1956.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Volunteer Reserve.

Transfer to the Retired List.—Surgeon Lieutenant-Commander James Matthew Banks is transferred to the Retired List, dated 20th November, 1956.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force.

Medical Branch.

The following Flight Lieutenants are transferred from the Reserve and appointed to a short-service commission, on probation for a period of twelve months: Francis Ian Walke (012787), 5th November, 1956; Remo Paul Vito Checcucci (031661), 16th November, 1956.

Flight Lieutenant R. P. V. Checcucci (031661) is granted the acting rank of Squadron Leader, 16th November, 1956.

Flight Lieutenant (Acting Squadron Leader) G. S. Radford (025626) ceases to hold the acting rank of Squadron Leader, 30th August, 1956.

Flight Lieutenant G. S. Radford (025626) is transferred to the Reserve, 29th November, 1956, on completion of his short-service commission.

The resignation of Flight Lieutenant C. R. G. Stoddart (015209) is accepted, 30th November, 1956.

Air Force Reserve.

Medical Branch.

Flight Lieutenant J. G. Shelton, M.B.E. (039592) is promoted to the temporary rank of Squadron Leader, 1st October, 1956.

Flight Lieutenant (Temporary Wing Commander) W. L. B. Stephens (1175) is granted the honorary rank of Group Captain, 8th November, 1956.

Corrigendum.

UNDER the heading "Medical Appointments" in the issue of March 2, 1957, it was stated that Dr. L. R. Rail had been appointed Honorary Neurosurgeon to the Royal Alexandra Hospital for Children. This was incorrect. Dr. Rail's appointment was as Honorary Neurologist. We express to Dr. Rail and to the Royal Alexandra Hospital our regret for this error.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Cross, Janet Buchan, M.B., B.S., 1955 (Univ. Sydney), 8 Winton Street, Turramurra, New South Wales.

Vaughan, John Bede, M.B., B.S., 1956 (Univ. Sydney), 21 Raymond Street, Oatley, New South Wales.

Deaths.

THE following deaths have been announced:

LANCHESTER.—Henry Compton Lanchester, on January 25, 1957, at Brisbane.

HURLEY.—Edmund Reginald Hurley, on February 19, 1957, at Geelong, Victoria.

Diary for the Month.

MARCH 18.—Victorian Branch, B.M.A.: Finance Subcommittee.
MARCH 19.—New South Wales Branch, B.M.A.: Ethics Committee.
MARCH 21.—New South Wales Branch, B.M.A.: Clinical Meeting.
MARCH 21.—Victorian Branch, B.M.A.: Executive of Branch Council.
MARCH 22.—Queensland Branch, B.M.A.: Council Meeting.
MARCH 23.—Victorian Branch, B.M.A.: Country Branch Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

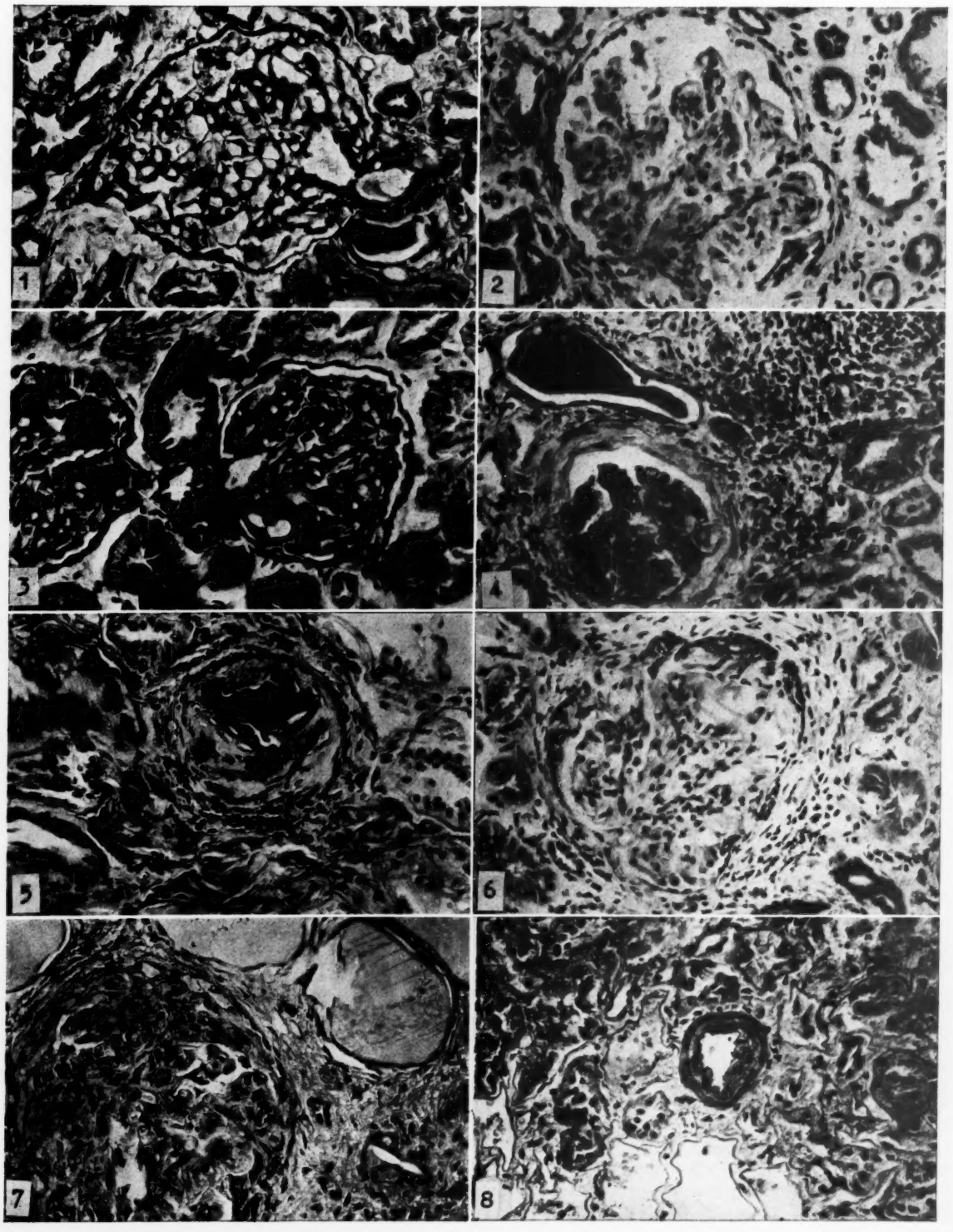
MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £5 *per annum* within Australia and the British Commonwealth of Nations, and £6 *per annum* within America and foreign countries, payable in advance.

ILLUSTRATIONS TO THE ARTICLE BY R. A. JOSKE AND J. L. STUBBE.



ILLUSTRATIONS TO THE ARTICLE BY ROBERT G. SHAW AND JOHN A. McLEAN.

FIGURE III.

FIGURE IV.

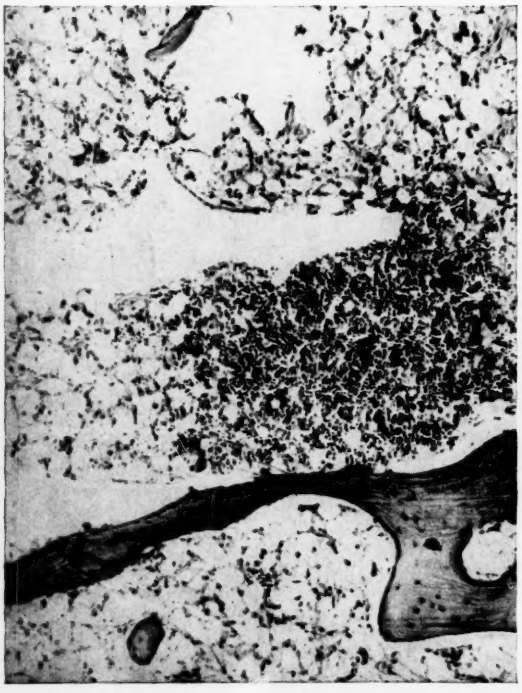


FIGURE VI.

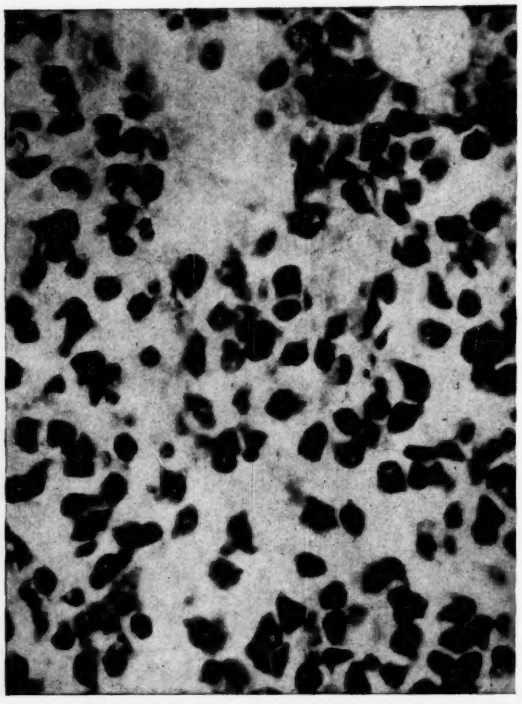


FIGURE VII.